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THE

CONNECTION BETWEEN SCIENCE

AND

REVEALED RELIGION.

ETHNOGRAPHIC MAP
OF THE
OLD CONTINENT,
1836.
To Illustrate Dr. Wiseman's Lectures.
Lapponian
FINNISH
Finnish
Esthonian
Livonian
Slavonian
Permian
Wotiac
Olet or Kalmuk
Hungarian
Pelasgian
Osmanli
BASQUE
Ilale
Moghrebi or Western Arabic
SEMITIC
Hebrew
Syro Chald
Armenian
Kurd
Persian
Afghan
Nanscrit
Hindi
Bengalee
Malayalam
Tamil
Pali
Cingalese
Arabic
NOUBA
Abyssinian
TRANSGANGETIC
Tibetan
Chinese
Indo Chinese
Coream
Japanese
KOURILIAN
Mantchoo
Samoyed
Mongol
Tungoosi
Yakoot
JENESEIAN
Jenisei R.
Lena R.
Kowina R.
KORYACK
KAMSKATKAN
SAMOYED
MONGOL
TARTAR
URAL
Petchora R.
Mesen R.
Obi R.
Ob R.
Ural
Tartar
Mongol
Samoyed
Kamskatkan
Koryack
Polynesian

TWELVE LECTURES

ON THE

CONNECTION BETWEEN SCIENCE

AND

REVEALED RELIGION.

DELIVERED IN ROME, BY

CARDINAL WISEMAN.

First American Edition.

VOL. I.

علم از بہر دین پروردنست

"Science should be dedicated to the service of religion."
GULISTAN, viii.

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DIRECTIONS TO THE BINDER.

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"Campner's and Blumenbach's Comparative Systems" to face page 159, Vol. I.
Plate 1st.—To face page 116, Vol. II.
Plate 2nd.—"Vase containing objects allusive to the Deluge" to face page 137, Vol. II.
Plate 3rd.—To face page 142, Vol. II.

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ADVERTISEMENT.

In presenting this Third Edition to the public, the Author has to express his regret that it appears merely as a transcript of the first. His present occupations leave him little or no leisure for the cultivation of literature, or the continuation of those studies which formed the delight of his youth. Whether it will ever please Providence to allow him an opportunity of resuming them, it is not in his power to judge. But should this ever be granted to him, it will be certainly dedicated to the completion of works left imperfect through attention to the claims of higher duties; and to no pursuits will he return with greater pleasure, than to those which will enable him further to verify the principles of this work. The more he has watched the progress of every science here treated of, the more he has found reason for conviction that religion has nothing to fear from the legitimate advance of human learning.

London, *July* 1, 1849.

PREFACE.

In the following Lectures, the reader will hardly fail to observe a certain want of harmony between the different parts; and I know not how I can better apologize for it, than by briefly stating the manner and occasion of their composition. They were first drawn up for private instruction, and read by me in the English College at Rome, over which I had the happiness of presiding; being intended for an introductory course to the study of theology. At the request of several friends, I was induced to deliver them to a public audience; and during the Lent of 1835, they were read to a large and select attendance in the apartments of His Eminence Cardinal Weld.

It will easily be understood how many modifications were requisite for the second delivery; particularly as I pledged myself in my prospectus to simplify my subjects so far as to make them intelligible to persons who had no previous acquaintance with them. Accordingly

many topics were but lightly touched, which, in the original draught, had been more fully developed, while others were extended to a length unnecessary for an academical audience possessed of preliminary scientific knowledge. In fact, the greater part of the Lectures were written over again for the occasion.

Among my audience I counted men whose reputation, in their respective departments of literature and science, might have made me shrink from my complicated task; yet I found them assiduous in their attendance, and encouraging in their judgment. They joined in a wish repeatedly expressed by most of my hearers, that these Lectures should be communicated to the public: and I came over to England, chiefly to carry this desire into execution. But then a further change appeared necessary, to prepare them for the press.

In the first place, many of the parts which had been suppressed in the second delivery, have been restored; while several elementary details, which were then introduced, have not been withdrawn. I wished to make the work interesting to different classes of readers; and hoped that the intermixture of some few topics, more exclusively addressed to the learned,

would not detract from the interest which the general plan might possess for the ordinary reader. Still, a certain incongruity must thence result; as some passages will appear addressed to a different audience from the greater part of the course.

The second cause of change is, perhaps, more satisfactory. My long residence abroad had debarred me from the consultation of several modern works, treating on the subject of these Lectures, so that in regard to English books, I might say with the poet—

> "Quod si scriptorum non magna est copia apud me,
> Hoc fit quod Romæ vivimus, illa domus." *

Now the perusal of these caused occasional modifications in the opinions which I had previously adopted. But even when a work has appeared since the delivery of the Lectures, I have thought it advisable to introduce the mention of it into the text, rather than omit it, to avoid an anachronism. On the whole, I am sensible that I have had neither leisure nor opportunity to improve them as might be expected, and that many more works might have been perused or consulted by me to great advantage.

* "Catullus ad Manlium," 33.

The form, therefore, in which my humble lucubrations appear before the public is that of a third modification; and if the observation be true, that second thoughts are *not* the best, but third thoughts, which correct the second, and bring them back in part to the more vivid and natural impressions exhibited in the first,* I may appear to present this little narrative of what I have done, rather in the form of a recommendation than of an apology.

But, from my heart, I can say, that no reader's eye, however keen, will be more sensible than mine is to the imperfections of my work. The subjects of which it treats are varied, and have rather formed a relaxation from severer pursuits, than objects of professed research. That its numerous faults will be observed, and perhaps severely criticised, I must naturally expect. Still I shall always feel that the cause which I plead may well throw some of its protection over its least worthy advocates, and conciliate the benevolence of all that revere and love it. To succeed in its behalf would, indeed, be glorious; but the attempt—the labor of which, in this case, has not been small—cannot surely be divested of all merit; and

* "Guesses at Truth."

I shall gladly hail the augury of the indulgent reader, if, at the conclusion of this my proem, he addresses me in the words of the poet:

> Μέγας ἀγών· μεγάλα δ' ἐπινοεῖς ἔλεῖν.
> Μακάριος γε μὴν κυρήσας ἔσει·
> ΠΟΝΟΣ Δ ΕΥΚΛΕΗΣ.
> EURIPID. *Rhes.* Act. i. v. 195.*

---

* Great is the cause, and great thine aim;
Thrice happy, if success shall claim
Its due reward; yet honor'd still
May be the labor and the will.

LECTURE THE FIRST;

ON THE

COMPARATIVE STUDY OF LANGUAGES.

PART I.

GENERAL INTRODUCTION.—Relation of these Lectures to the Christian Evidences.—Method to be therein followed.—Results to be anticipated.

ETHNOGRAPHY, or comparative study of languages.—HISTORY—*First* period: Search after the primary language; defects in the object and methods.—*Second* period; Collection of materials; lists of words, and series of Our Fathers.—*Third* period: Attempts at arrangement and classification; Leibnitz, Hervas, Catherine II., and Pallas, Adelung and Vater.—Dangerous appearance of the study at this period, from the apparent multiplication of independent languages.—RESULTS—*First:* Formation of families, or large groups of languages in close affinity by words and grammatical forms.—Exemplification in the Indo-European, Semitic, and Malayan families.—*Second:* Progressive reduction of supposed independent languages into connection with the great families; Ossete, Armenian, Celtic.—Review of Sir W. Betham's System; Dr. Prichard; Recapitulation; Concluding Remarks.

WERE it given unto us to contemplate God's works in the visible and in the moral world, not as we now see them, in shreds and little fragments, but as woven together into the great web of uni-

versal harmony; could our minds take in each part thereof, with its general and particular connections, relations, and appliances—there can be no doubt but religion, as established by Him, would appear to enter, and fit so completely and so necessarily into the general plan, as that all would be unravelled and destroyed, if by any means it should be withdrawn. And such a view of its interweaving with the whole economy and fabric of nature would doubtless be the highest order of evidence which could be given us of its truth. But this is the great difference between nature's and man's operation, that she fashioneth and moulds all the parts of her works at once, while he can apply himself only to the elaboration of one single part at a time;* and hence it comes, that in all our researches, the successive and partial attention which we are obliged to give to separate evidences or proofs, doth greatly weaken their collective force. For, as the illustrious Bacon hath well remarked, "the harmony of the sciences, that is, when each part supports the other, is, and ought to be, the true and brief way of confutation and suppression of all the smaller sorts of objections; but on the other hand, if you draw out every axiom, like the

* "For as when a carver cuts and graves an image, he shapes only that part whereupon he works, and not the rest; but contrariwise, when Nature makes a flower or living creature, she engenders and brings forth rudiments of all the parts at once."—Bacon, "De Augm. Scient." l. vii. p. 360 *Trans. Oxf.* 1640.

sticks of a fagot, one by one, you may easily quarrel with them, and bend and break them at your pleasure." *

To the difficulties thus thrown in our way by the limitation of our faculties, prejudices of venerable standing have added much. For ages it has been considered, by many, useless and almost profane, to attempt any marriage between theology and the other sciences. Some men in their writings, and many in their discourse, go so far as to suppose that they may enjoy a dualism of opinions, holding one set which they believe as Christians, and another whereof they are convinced as philosophers. Such a one will say that he believes the Scriptures, and all that they contain; but will yet uphold some system of chronology or history which can nowise be reconciled therewith. One does not see how it is possible to make accordance between the Mosaic creation and Cuvier's discoveries; another thinks the history of the dispersion incompatible with the number of dissimilar languages now existing; a third considers it extremely difficult to explain the origin of all mankind from one common parentage. So far, therefore, from considering religion or its science, theology, as entitled to sisterhood with the other sciences, it is supposed to move on a distinct plane, and preserve a perpetual parallelism with them, which prevents them all from clashing, as it de-

* Bacon, "De Augm. Scient." l. vii. p. 330.

prives them of mutual support. Hence, too, it is no wonder that theology should be always considered a study purely professional, and devoid of general interest; and that it should be deemed impossible to invest its researches with those varied charms that attract us to other scientific inquiries.*

Reflections such as these have led me to the attempt whereupon I enter to-day; the attempt, that is, to bring theology somehow into the circle of the other sciences, by showing how beautifully it is illustrated, supported, and adorned by them all; to prove how justly the philosopher should bow to her decisions, with the assurance that his researches will only confirm them; to demonstrate the convergence of truths revealed with truths discovered; and, however imperfectly, to present you with some such picture as Homer hath described upon his hero's shield; of things and movements heavenly, that appertain unto a higher sphere, hemmed round and embellished by the representations of earthlier and homelier pursuits.

My purpose, therefore, in the course of lectures to which I have invited you, is to show the correspondence between the progress of science and the development of the Christian evidences; and

* For a view of the unsatisfactory method by which the French eclectic school attempts at once to separate and reconcile science and revelation, see Damiron, "Essai sur l'Histoire de la Philosophie en France:" *Bruxelles*, 1829, pp. 471–474: or Carové, "Der Saint Simonismus und die neuere Philosophie *Leip.* 1831, p. 42.

before proceeding further, I must be allowed to explain the terms and limits of my inquiries. By the simple statement of my theme, it will be seen that I do not intend to enter upon the well-occupied field of natural theology, or to apply the progress of science to the increasing proof thereby gained, of a wise all-ruling Providence. It is of revealed religion alone that I mean to treat—of the evidences which Christianity has received in its numberless connections with the order of nature or the course of human events. And when I use the word evidences, I must be understood in a very wide and general signification. I consider that whatever tends to prove the truth of any narrative in the sacred volume, especially if that narrative, to merely human eyes, appears improbable, or irreconcilable with other facts, tends also essentially to increase the sum of evidence which Christianity possesses, resting, as it essentially does, upon the authenticity of that book. Any discovery, for instance, that a trifling date, till lately inexplicable, is quite correct, besides the satisfaction it gives upon an individual point, has a far greater moral weight in the assurance it affords of security in other matters. And hence a long research, which will lead to a discovery of apparently mean importance, must be measured according to this general influence, rather than by its immediate results.

But while, as has been observed, it is the interest of those who search after truth to generalize

their proofs as much as possible, and take their stand upon the broadest ground, those who attack it will ever find their greatest advantage in particular objections, and piecemeal destruction. And such, on their part, has been the policy pursued. Each science has been individually ransacked, and many partial results of each separately urged, as sufficient to overthrow the defences of Christianity. These repeated attempts must form an additional motive for inquiry into the real results of modern science. It is true that the Christian revelation rests upon general arguments, not easily shaken by particular objections. It is true that its evidence, external and internal, consists of numerous and various considerations, dove-tailed and riveted so strongly together, that a partial attack upon one point is borne by the rest; so that we incur greater difficulties by supposing the whole system of Christianity false in consequence of a particular objection, than we do by confessing our inability to answer, and adhering nevertheless to the cause which it impugns.

But although the less-instructed Christian may thus preserve his conviction undisturbed by difficulties whereunto he sees not the immediate answer, there is another method of proceeding more satisfactory, more interesting, and to those who have the power, almost of obligation; that is, boldly and patiently to examine the objections, and solve them individually; and for this purpose to neglect no means within their reach, of pro-

curing the necessary information. Of our ultimate and complete success, we cannot allow ourselves to entertain a doubt.

Causa jubet melior superos sperare secundos.

If we are firmly convinced that God is as much the author of our religion as he is of nature, we must be also thoroughly assured that the comparison of his works, in both these orders, must necessarily give a uniform result. An essential part of my task will therefore be to show how the very sciences, whence objections have been drawn against religion, have themselves, in their progress, entirely removed them; and hence my method of treating each science, with one or two exceptions, will necessarily be historical. I shall thus avoid an important difficulty—that of supposing all my hearers furnished with an accurate knowledge of so many different pursuits. Instead of this, I flatter myself, that while I show the signal services rendered to religion by the progress of each science, I shall present a short and simple introduction to its history and principles.

We shall see how the early stage of each furnished objections to religion, to the joy of the infidel and the dismay of the believer; how many discouraged these studies as dangerous; and then how, in their advance, they first removed the difficulties drawn from their imperfect state, and then even replaced them by solid arguments in favor of religion. And hence we shall feel war-

ranted in concluding, that it is essentially the interest of religion to encourage the pursuit of science and literature in their various departments.

In the arrangement of my subjects, while I pay attention to a certain natural order of connection, I shall also be anxious to give them an increasing interest; and I almost fear I have been guilty of an error in tactics, by placing in my front the science whereupon I now enter, as it can hardly possess the general interest of most that will follow it, though I trust it will fully justify all I have advanced in these preliminary remarks. I mean *Ethnography*, or the classification of nations from the comparative study of languages, a science born, I may say, almost within our memory.

This science has also been properly called by the French *Linguistique*, or the study of language; and is also known by the name of comparative philology. These names will sufficiently declare the objects and methods of the study; and I will not premise any other definition, as I trust you will gradually, as my subject unfolds, become acquainted with its entire range.

I enter upon it with the full consciousness of the difficulties which surround it; it is a science which as yet has found no historian, and hardly possesses any elementary works; and I have had to collect from many writers the materials for the sketch which I shall endeavor to present to you: it is, indeed, by the simple history of this science

that we shall see the Mosaic account of the dispersion of mankind most pleasingly confirmed.

I need hardly recall to your memories this remnant of early history. That mankind descended from one family—spoke but one language; that, in consequence of their being united in a design which accorded not with the views of Providence, the Almighty confounded their speech, and introduced among them a variety of tongues, which produced a general dispersion; such, in brief, are the outlines of this venerable history, recorded in the eleventh chapter of Genesis.

Commentators upon this passage have generally considered that this confusion consisted, not so much in the abolition of the common tongue, as in the introduction of such a variety of modifications in it as would suffice to effect the dispersion of the human race. In fact, it was only on this hypothesis that the long and useless search after the original language could have been conducted.

But the whole of this narrative is of course treated by the adversaries of revelation as a fable, or a *mythus*.* We may allow philosophers, indeed, to discuss such abstract questions as whether speech could have been the gradual invention of the human species, or must have been the free gift of God, as Dr. Johnson, Anton, and Bonald

* "The Book of Genesis veiled, in a significant expressive *mythus*, a problem which no philosophy has satisfactorily solved."—Gensenius. "Geschichte der hebräischen Sprache und Schrift:" *Leip.* 1815, p. 13. (See Geddes's Preface to his Translation of the Pentateuch, 1792, p. xi.)

maintain;* or neither a pure gift nor an invention, but, according to the later theory of the lamented Humboldt, a necessary and spontaneous result of man's organization.† We might even allow them the innocent amusement of discussing whether such an invention would have begun by substantives, as Dr. Smith is of opinion,‡ or by interjections, as the President De Brosses and Herder conjecture.§ So long as an imaginary theatre is supposed for

* Boswell's "Life," first ed. vol. ii. p. 447. R. G. Anton, "Ueber Sprache, in Rücksicht auf Geschichte der Menschen:" *Görlitz*, 1799, p. 31. Beattie's "Theory of Language:" *London*, 1788, p. 95. This position is the basis of Bonald's system, and is warmly attacked by Damiron, *ubi sup.* p. 224; Cousin, Preface to Maine de Biran's "Nouvelles Considérations:" *Paris*, 1834, p. xv.; and many others.

† "Speech, according to my fullest conviction, must really be considered as inherent in man; since, as the work of his intellect in its simple knowledge, it is absolutely inexplicable. This hypothesis is facilitated by supposing thousands and thousands of years: language could not have been invented without its type pre-existing in man." After several highly interesting remarks, he proceeds to observe, that still language must not be considered as a gift bestowed ready-formed to man (etwas fertig gegebenes), but as something coming from himself.—"Ueber das vergleichende Sprachstudium, in Beziehung auf die verschiedenen Epochen der Sprachentwickelung." In the Acts of the Royal Academy of Sciences of Berlin; historical and philosophical class, 1820-21: *Berlin*, 1822, p. 247.

‡ "Theory of Moral Sentiments:" *Edinb.* 1813, vol. ii. p. 364.

§ De Brosses, "Traité de la Formation Méchanique des Langues" (anonym.): *Paris*, 1765, tom. ii. p. 220. Herder, "Nouveaux Mémoires de l'Académie Roy. des Sciences:" *Berlin*, 1783, p. 382.

the actors in such a discovery, so long as we speak with the President, of children abandoned to the tuition of nature, or with Soave, of two insulated savages, the field is open, and the disquisition without danger.

But other writers have transferred their speculations upon this subject to the dominion of history; Maupertuis, for instance, supposes the human race to have been originally without speech, till its different divisions gradually invented separate dialects.* Rousseau and Volney represent man as the "mutum et turpe pecus" of the ancients, "thrown," according to the words of the latter, "as it were by chance, on a confused and savage land, an orphan abandoned by the unknown hand that had produced him,"† and left to discover the first elements of social life, much on the principle, and by the process described in the Epicurean poet:—

> "Ergo si varii sensus animalia cogunt,
> Muta tamen quum sint, varias emittere voces;
> Quanto mortaleis magis æquum est tum potuisse
> Dissimileis alia, atque alia res voce notare."‡

This view of the origin of language is not unfrequently repeated at the present day. Charles Nodier published a series of articles, entitled *Notions élémentaires de Linguistique*, in the *Temps*

*"Dissertation sur les différens moyens dont les hommes se sont servis pour exprimer leurs idées."—Hist. de l'Académie.: *Berlin*, 1756, p. 335.

†"Ruines:" *Paris*, 1820, p. 37. "Causes de l'Inégalité entre les Hommes, Œuvres complètes:" *Paris*, 1826, p. 40.

‡ Lucret. l. v. 1036.

paper for September and October, 1833, wherein he maintains that languages were the handiwork of human powers acting by themselves. Even writers who were never suspected of having entertained opinions at variance with the inspired narrative, appear sometimes to indulge in the same imagination.*

The Marquis de Fortia d'Urban goes further, and denies at once the history of the dispersion as given by Moses, and indeed the inspiration of the historical narratives of Scripture.†

The inquiry, when thus considered, seems to involve the authenticity of the Mosaic documents touching the early history of man. It then becomes our duty to investigate the very study which gave birth or strength to such objections: and we shall soon perceive that the nearer it has advanced towards perfection, the more it has confirmed the veracity of the Jewish historian.

The history of the comparative study of languages presents the same features in the normal sciences which chemistry does among physical pursuits. While the latter was engaged in a fruitless chase of the philosopher's stone, or a remedy for every disease, the linguists were occupied in the equally fruitless search after the primary language. In the course of both inquiries, many important and unexpected discoveries were doubtless made; but it

* For instance, Dr. Murray, in his "History of European Languages:" *Edinb.* 1823, vol. i. p. 28.

† "Essai sur l'Origine de l'Ecriture:" *Paris*, 1832, p. 10.

was not till a principle of analytical investigation was introduced in both that the real nature of their objects was ascertained, and results obtained, far more valuable than had first caused and encouraged so much toilsome application.

The desire of verifying the Mosaic history, or the ambition of knowing the language first communicated by divine inspiration, was the motive or impulse of the old linguists' chimerical research. For, it was argued, if it can only be shown that there exists some language which contains, as it were, the germ of all the rest, and forms a centre whence all others visibly diverge, then the confusion of Babel receives a striking confirmation; for that language must have been once the common speech of mankind.

But here such a host of rivals entered the lists, and there conflicting pretensions were advanced with such assurance, or such plausibility, as rendered a satisfactory decision perfectly beyond hope.

The Celtic language found a zealous patron in the learned Pezron;* the claims of the Chinese were warmly advocated by Webb, and several other writers.† Even in our own times—for the

* "Antiquité de la Nation et de la Langue des Celtes." *Paris*, 1704.

† "Essay on the Probability that the Language of China is the primitive Language." *London*, 1669. "The Antiquity of China; or, an Historical Essay endeavoring a Probability that the Language of China is the primitive Language." *Ibid.* 1678.

race of such visionaries is not yet extinct—Don Pedro de Astarloa,* Don Thomas de Sorreguieta,† and the Abbé d'Iharce-Bidassouet-d'Aroztegui,‡ nave taken the field as champions of the Biscayan, with equal success as, in former times, the very erudite and unwieldy Goropius Becanus brought up his native Low Dutch as the language of the terrestrial paradise.§

Notwithstanding these ambitious pretensions, the Semitic languages, as they are called, that is the languages of Western Asia, seemed to be the favored claimants; but, alas! even here there was rivalry among the sisters. The Abyssinians boasted their language to be the mother stock, from which even Hebrew had sprung;‖ a host of Syriac authors traced the lineal descent of their speech through Heber, from Noah and Adam:¶ but Hebrew was the pretender that collected the most nu-

* "Apologia de la Lengua Bascongada, o Ensayo critico-filosofico de su perfeccion y antiguedad sobre todas las que se conocen." *Madrid*, 1803.

† "Semana Hispaña-Bascongada la unica de la Europa, y la mas antigua del orbe." *Ibid.* 1804.

‡ See his prospectus published in the French journals, 1824. His work has, I believe, since appeared.

§ "Origines Antuerpianæ:" *Antw.* 1569, pp. 534, *seq.*

‖ See the Advertisement to the Ed. Princ. of the New Testament. *Rome*, 1548.

¶ See their authority, given in Assemani's "Bibliotheca Orientalis," tom. iii. part i. p. 314. Ibn Kaledoon, Massoudi, Haider Razi, and other Arabic authors, maintain the same opinion. (See Quatremère's learned Essay, in the "Nouveau Journal Asiatique," March, 1835.)

merous suffrages in its favor. From the Antiquities of Josephus, and the Targums, or Chaldee paraphrases of Onkelos and of Jerusalem,* down to Anton in 1800,† Christians and Jews considered its pretensions as almost definitively decided; and names of the highest rank in literature—Lipsius, Scaliger, Bochart, and Vossius—have trusted the truth of many of their theories to the certainty of this opinion.

The learned and judicious Molitor, however, who has brought an immense store of Rabbinical literature to bear upon the demonstration of the Catholic religion which he has embraced, acknowledges that "the Jewish tradition which makes Hebrew the language of the first patriarchs, and even of Adam, is, in its literal sense, inadmissible;" though he adds very judiciously, that it is sufficient to acknowledge the inspiration of the Bible, for us to be obliged to confess that the language in which it is written is a faithful, though earthly, image of the speech of paradise; even as fallen man preserves some traces of his original greatness.‡

Such was the object towards which the comparative study of languages in general first directed its attention; and two essential faults may be ob-

* Josephus, "Archæolog." lib. i. c. i. tom. i. p. 6, ed. *Haverc.* Targumin on Gen. xi. i.

† "De Lingua Primæva." *Wittemb.* 1800.

‡ "Philosophie der Geschichte, oder über die Tradition." Not having, at this moment, the original at hand, I must refer to the French abridgment, "Philosophie de la Tradition," par X. Quris, p. 211. *Paris*, 1834.

served in the manner of conducting it, both of which arose from the limited views of its cultivators.

The first was, that hardly any affinity seems to have been admitted between languages, save that of filiation. Parallel descent from a common parent was hardly ever imagined: the moment two languages bore a resemblance, it was concluded that one must be the offspring of the other.* This mode of reasoning is most visible among the writers upon the Semitic dialects; but there are curious instances of it also in others.

Thus an affinity between the Persian and German languages had been early perceived by Lipsius and Salmasius:† but no solution could be devised of this phenomenon, except that one must have borrowed from the other. "Hodierna (lingua Persica)," says the learned David Wilkins, "ex *multis Europæ et Orientis vocibus composita est*,

* The following passage, from an author with whose opinions on most points I do not coincide, may explain this position. "Il ne faut pas se représenter les peuples et les langues en lignes perpendiculaires . . . Il n'y a entre elles ni droit d'aînesse, ni primogéniture. Cette question qu'on entend faire, la langue A est-elle plus ancienne que la langue B, est puérile, et tout aussi dénuée de sens que le sont ordinairement les controverses scholastiques touchant les langues mères."—Principes de l'Etude comparative des Langues, par le Baron de Mérian, p. 12. *Paris*, 1828.

† Lipsius, "Epist. ad Belgas." *Antw.* 1602-4. Salmasius de Lingua Hellanist." p. 378. Scaliger is often quoted as having observed this resemblance (*vide* Wilkins, *inf. cit.*); but in his 228th letter to Pontanus, he says: "Nihil tam dissimile alii rei quam Teutonismus linguæ Persicæ."

Latinis sc. Germanicis, Græcis." * Walton had before expressed the same opinion as quite certain. "Ut gens Persica ipsa Græcorum, Italorum, Arabum, Tartarorumque colluvies est, ita lingua quoque ejus ex horum linguis est conflata!" †

This principle led the acute and learned Reland into a different, but still more curious, error upon the same subject. He had collected the Indian words preserved in ancient authors, and found that many of them could be illustrated from the Persian. Yet this did not lead him to suspect an affinity between the Indian and the Persian languages. But as he knew no grounds on which to resort to the usual expedient of supposing that one had given birth to the other, he was unable, upon any principle then known, to solve this problem; and therefore concluded that the words so collected were not Indian, but Persian, and that the ancients had been mistaken in giving them as Indian.‡ Even in more modern times, the Abate Denina could devise no explanation of the affinity between Teutonic and Greek, § other

* Preface to Chamberlayne's "Oratio Dominica," p. 7. *Amstel.* 1715.

† Prolegom. xvi. § 2.

‡ "De Veteri Lingua Indica Dissertat. Miscellan." tom. i. p. 209. *Traject. ad Rhen.* 1713. (See Professor Tychsen's correction of them, Append. iv. to Heeren's "Researches," vol. ii. p. 376. *Oxford*, 1833.)

§ "Sur les causes de la Différence des Langues."—Nouveaux Mémoires de l'Académie Royale, 1783, p. 542. *Berlin*, 1785.

than supposing the ancient Germans to have been a colony from Asia Minor: so that truly we might exclaim with the poet—

"Hic quoque sunt igitur Graiæ, quis crederet, urbes,
Inter inhumanæ nomina barbariæ;
Huc quoque Mileto missi venere coloni
Inque Getis Graias constituere domos." *

The second error in the method of this study was that it was conducted almost entirely by etymology, and not by comparison. As the authors whom I have mentioned wish to prove the derivation of other languages from the one whose cause they espoused, they were necessarily driven to this expedient. Similarity of words or forms could have only established an affinity between the languages in which it occurred, and therefore it was preferable to find in the favorite language a supposed original word which contained in itself the germ, as it were, or meaning of the term examined, rather than trace the affinities through sister languages, or even condescend to derive it from obvious elements in its own native language. Thus, if I remember right, Jennings, somewhere in his Jewish Antiquities, derives the Greek ἀσυλον, *asylum*, from the Hebrew אשר *eshel*, an *oak* or *grove*, in spite of the simple etymology given it by the ancients, α *priv.* and συλαω, forming together the signification of *inviolable*. With equal propriety might we derive the English verb to *cut off*, from the Syriac verb ܩܛܦ *cataf*,

* Ovid. "Trist." lib. iii. El. ix.

which signifies the same thing. These extraordinary etymologies swarm, even to this day, in popular writers advocating the pretended rights of the Hebrew language. Nor did other authors neglect this method. Becanus, for instance, explains from Dutch every name found in the early history of Genesis; and, discovering in his own language a possible analysis of them, concludes triumphantly that those names were given in that tongue. Who can for an instant doubt that Adam and Eve spoke Low Dutch, when he learns that the name of the first man clearly resolves itself into *Hat* (hate) and *dam*, because he was as a dam opposed to the serpent's hatred; and that of his consort into *E* (oath) and *vat*, she being the receptacle of the oath, or promise of a Redeemer? *

But to return. The defects I have pointed out in the early history of our science, were the natural consequence of the objects it pursued. It was necessary to enlarge at once the view, as well as the field of the philologer, before any good results could be expected. It was necessary to begin upon a new method, and without the mischievous spirit of system; and the collection of facts was the necessary basis to such improvements. "Ici, comme ailleurs," says Abel-Rémusat, "on a commencé par bâtir des systêmes, au lieu de se borner à l'observation de faits."†

* *Ubi sup.* p. 539.

† "Recherches sur les Langues Tartares:" *Paris*, 1820 p. xviii.

Had the moderns been obliged to begin their studies at this first point, many years must have elapsed before they could have reached maturity; for the collection of materials would have occupied a considerable time. Fortunately, however, the older writers had done something in this way, though with no very definite purpose. Travellers, among other curiosities, had brought lists of words from countries which they had visited; missionaries, with more exalted views, learned the languages of nations whom they converted, and wrote elementary books for their instruction. These two sources produced the collections necessary for prosecuting the comparative study of languages.

The first traveller who thought of enriching his narrative with lists of foreign words was the amusing and credulous Pigafetta, who accompanied Magelhaens in the first voyage round the globe. At the conclusion of his journal, he presents us with three very meagre vocabularies; the first whereof is of the Brazilian language; the second, collected from his Patagonian giant, who makes so conspicuous a figure in his book, is of the Tehuel; the third is from Tidore, one of the Moluccas.* His example was followed by later navigators; almost every traveller who ex-

* Primo volumine, 3a editione, delle "Navigationi et Viaggi raccolti già da M. Gio. Bat. Ramusio:" *Ven.* 1563, p. 370. The words relating to religion in the vocabulary of Tidore, are Arabic.

plored new lands, or gleaned fuller information upon those already known, collected specimens of this nature, though often injudiciously, almost always inaccurately.* Many of these collections were deposited in libraries, and used at subsequent periods by learned men. The judicious Reland, whose labors in this department of literature have been very much overlooked, published from manuscripts of this sort, preserved in the Leyden library, vocabularies of the Malayalim, Cingalese, Malabaric, Japanese and Javanese. He also took particular pains to collect from travellers, specimens of American languages.† In like manner the collections of Messerschmidt, made during his seven years' residence in Siberia, and deposited in the Imperial Library at St. Petersburg, were of signal service to Klaproth, in compiling his *Asia Polyglotta.*‡

Books of devotion were naturally the first printed by missionaries, for the use of those nations whom they converted to Christianity, and these were sure to contain the Lord's Prayer. This was therefore the example most easy to be

* See Balbi's "Introduction à l'Atlas Ethnographique du Globe;' *Paris*, 1826, pp. 27 *seqq.* and p. c. of the Disc. Prélim.

† "De Linguis Insularum quarundam Orientalium Dissert. Miscell." pars 3: *Traject.* 1708, p. 57. He adds short lists of words used in Solomon's Island, Cocas, N. Guinea, Moses Island, Moo, and Madagascar, and concludes (p. 137), that Malay is the basis of them all. This we shall see has been substantially verified. "De Linguis Americanis." *Ibid.*

‡ *Pa. i.*, 1823, p. viii.

procured of a variety of languages, so as to have a uniform specimen for their comparison. Smaller collections of it had been made by Schildberger, Postel, and Bibliander: but the naturalist Gesner first conceived the idea of uniting it as a sample to a catalogue of known languages; and he published, in 1555, his *Mithridates*, better known in the extended, but less accurate, edition of Waser.* The merit of this little work is, that it formed a nucleus to later acquisitions, and though we must smile to see it standing beside its bulky namesake by Adelung and Vater, it is pleasing to trace this noble monument of human industry to the little dictionary of Gesner. Here the languages are arranged in alphabetical order, one half thereof being erroneously entitled or described; and when I tell you that the language of the gods has a place there, because Homer has indulged in such a fiction, you will easily judge what critical merit it possesses. This, and the subsequent collections by Müller, Ludeke, Stark, and others, were completely eclipsed and superseded by the more extensive series of

* "Mithridates Gesneri," Gasper Waserus recensuit et libello commentario illustravit. *Tigur.* 1610. Between these two editions it was published in Rome, without any acknowledgment, as an "Appendix to F. Angelo Rocca's Bibliotheca Vaticana Illustrata:" *Rome.* 1591, pp. 291–376. The author pretends to have collected the materials himself (pp. 310–364), yet has transcribed the whole of Gesner's work with its typographical mistakes, and has only made a few trifling additions.

Wilkins and Chamberlayne, published at Amsterdam, after the beginning of the last century.*

This date brings us to a period when the science, however imperfect its principles may have remained for a long time after, took at least a most extended field into cultivation, and varied the character of its observations and experiments, so as to prepare the way for more important discoveries. It is perhaps its critical moment both for ethnography and for religion.

The name of Leibnitz is the connecting link between the sciences at the period we have now reached. Had we to define in one word the pursuits of this great man, we could only do so by saying they were *philosophy*. But this would be an injustice to his fame; for many claim and obtain an equal credit by casting some additional light upon some individual branch of science. The genius of Leibnitz was like the prism of his great rival; this one ray, on passing through it, was refracted into a thousand variegated hues, all clear, all brilliant, and connected in almost imperceptible gradations, not of shadow, but of light. In his writings we follow the changeful beam, playing through the whole range of science; traced to his mind, we discover all its varieties diverging from one single principle, a bright and vivid current of

* "Oratio Dominica in diversis omnium fere Gentium Linguis versa," editore J. Chamberlaynio. *Ams.* 1715. It is followed by "Letters" from Dr. Nicholson, Leibnitz, and Wotton.

philosophic thought. In him, mathematics and moral philosophy, history and philology, for the first time found a common seat; and persons even deeply versed in any one of these studies bowed to the authority of the man who possessed sufficient genius to embrace them all, and make them contribute to their mutual advantage.

From such a man we might expect essential improvements in any science, where this combination of varied acquirements was singularly necessary. Such was Ethnography, and to Leibnitz, therefore, does it owe those principles which first allowed it to claim a place among the sciences. Though, from some passages in his works, he is supposed to have patronized the rights of Hebrew to be the primary language, in his letter to Tenzel he clearly rejects those claims.* Be this as it may, so far as the mere comparison of words can go, he must be admitted to have proposed the first sound principles; nay, there is hardly an analogy announced by the followers of that comparative system in modern times which he has not somewhere anticipated; several of his hopes have been fulfilled—many of his conjectures verified.

Instead of confining the study of languages to the useless object pursued by the earlier philologers, he saw and pointed out its usefulness for the advancement of history, for tracing the migrations of early

* "G. Leibnitii Opera Omnia," edit. Dut. tom. vi. part ii. p. 232. A similar opinion is expressed in a letter to him from Hermann von der Hardt, p. 235.

nations, and penetrating even beyond the mist of their earliest and most unauthentic records.* This enlargement of view necessarily produced a variation of method. However he might occasionally indulge in trifling etymologies for a pastime, Leibnitz well saw, that to extend the sphere of usefulness which he wished to give the science, a comparison must be instituted between idioms most separated in geographical position. He complains that travellers were not sufficiently diligent in collecting specimens of languages,† and his sagacity led him to suggest that they should be formed upon a uniform list, containing the most elementary and simple objects.‡ He exhorted his friends to collect words into comparative tables, to investigate the Georgian, and to confront the Armenian with the Coptic, and the Albanese with German and Latin.§ His attention to these pursuits, and the peculiar sagacity of his mind, led him to conjectures which have

* "Je trouve que rien ne sert davantage à juger des connexions des peuples que les langues. Par exemple, la langue des Abyssins nous fait connaître qu'ils sont une colonie d'Arabes."—Lettre au P. Verjus: *Ibid.* p. 227. "Quum nihil majorem ad antiquas populorum origines indagandas lucem præbeat quam collatio linguarum," etc.—Desiderata circa Linguas Populorum: *Ibid.* p. 228. Lacroze ("Commerc. Epistol." tom. iii. p. 79. *Leips.* 1742) and Reland (*ubi sup.* p. 78) take the same view of this study.

† "C'est un grand défaut que ceux qui font des descriptions des pays, et qui donnent des relations des voyages, oublient d'ajouter des essais des langues des peuples, car cela servirait pour en faire connaître les origines."—Monumenta varia inedita, ex Musæo J. Feller, tom. xi. p. 595. *Jena*, 1717.

‡ "Desiderata" (*ubi sup.*). § Tom. v. p. 494

been curiously verified by modern research. For instance, he suspected there might be an affinity in words between the Biscayan and the Coptic, the languages of Spain and Egypt,* a conjecture which you will see has been put to the test of mathematical calculus by the late Dr. Young.

I remarked just now that this was the critical moment of the study, in regard to religion, as well as to Ethnography; and the reason is plain. The old tie which had hitherto held all languages in a supposed affinity,—their assumed derivation from Hebrew,—was now broken or loosened, and no other substituted for it. The materials of the study, whence the modern science had to issue in fair proportions, were now in a state of fusion, without form or connection. In the search for new materials, each day seemed to discover a new language, independent of all previously known, and consequently to increase the difficulty of reconciling appearances with the narrative of Moses.†

It was not now sufficient to find a few words bearing some resemblance in three or four languages, and hence conclude the common origin of all.

* "S'il y avait beaucoup de mots Basques dans le Cophthe, cela confirmerait une conjecture que j'ai touché, que l'ancien Espagnol et Aquitanique pouvait être venu d'Afrique. Vous m'obligerez, en marquant un nombre de ces mots Cophtho Basques."—*Ibid.* p. 503; also tom. ii. p. 219.

† It was generally supposed that the number of primary languages could only be about seventy. (See Hervas, "Origine, Meccanismo, ed Armonia degl' Idiomi," p. 172. *Cesena* 1785.)

As an instance of this older practice, I will quote the word *sack*, as one of the favorite breathing-points of the old etymologists. Goropius Becanus, whom I must once more quote as representative of the ancient school, accounts for this word being found in so many languages upon the ingenious ground, that no one at Babel would have forgot his wallet, whatever else he might leave behind. This valuable psychological surmise he confirms from his own observation. Our learned doctor was once on a time called in to attend a German in a brain fever, who had stabbed himself during a paroxysm of his complaint; but though suffering dreadful pain, the patient would not allow him, or any of his brethren, to approach him. "The wretched man," says he, "did not remember that we were physicians, ready to put his disorder to flight." Yet in spite of this manifest exhibition of madness and delirium, there was one object which he never forgot, and about which his reason seemed perfectly unclouded—a bag of dollars, which he kept under his pillow. "No wonder, therefore," exclaims our philosopher, cunningly transferring his argument from the contents to the container, and from the object to its name,—"no wonder, that at Babel none should forget the term for so interesting an article."* Yet the numerous examples collected of this word, will be hardly found to go out of two only families of languages —the Semitic and the Indo-European. In like man

* *Ubi sup.* p. 578.

ner, Count de Gebelin, who made the last stand upon the old system, often draws the most sweeping conclusions of universal affinity, after comparing, among themselves, words from the different Semitic or Teutonic dialects.*

This method of reasoning was now, however, to be exploded, and in the meantime no general principle was to be substituted in its place. Only an analytical method would be admitted, whereby the grammatical elements of language were to be minutely decomposed and compared, as well as their words, and no affinity admitted between two languages which would not stand a very rigid test. It would therefore appear that the further the search proceeded, the more dangerously it would trespass upon the forbidden ground of inspired history.

An uneasiness on this head is clearly discernible in the works of an author, who, towards the close of last century, went far beyond all his forerunners, in laborious research, and in amassing materials for this interesting science. This was the indefatigable and learned Jesuit, Don Lorenzo Hervas y Pandura, who, in a series of works, mostly forming part of his *Idea dell' Universo*, laid before the public vast additions to the stores already described. He had indeed the advantage of belonging to a religious society, possessing within its

* "Monde Primitif," vol. iii. p. 30, *seq.* *Paris*, 1775–81, in the illustration of his "Premier Principe: Les langues ne sont que des dialectes d'une seule." Also pp. 290, *seqq.*

own circle men who had travelled and preached in every district of the globe. Not only did he thus receive personal information on languages little known, but he was able to procure many grammars, vocabularies, and writings, which had scarcely been seen in Europe. With these materials at command, he published year after year, at Cesena,* his numerous quartos upon languages, which were translated and republished by his friends in Spain.†

The great merit of Hervas is his indefatigable zeal and diligence in collecting; there is hardly an attempt at systematic arrangement in his works, but rather a degree of confusion and want of judgment are perceptible in his remarks. Mistakes must indeed be naturally expected in one who wandered over so wide a field, and who had gener-

* The following are his principal works: "Catalogo delle Lingue conosciute, e Notizia della loro Affinità e Diversità," 1784. "Origine, Formazione, Meccanismo, ed Armonia degl' Idiomi," 1785. "Aritmetica delle Nazioni, e Divisione del Tempo fra l'Orientali," 1785. This is one of the most interesting and valuable among Hervas's works, and there is a supplement to it at the end of the 20th volume of his works. "Vocabolario Poliglotto con Prolegomeni sopra più di 150 Lingue," 1787. "Saggio Prattico delle Lingue," 1787. This contains the Lord's Prayer in more than 300 languages and dialects, with grammatical analyses and notes.

† See "Voyage en Espagne," par C. A. Fischer: *Paris*, 1801 tom. ii. p. 52. The Spanish edition of Hervas is much the more complete. The "Catalogo de las Lenguas de las Naciones conocidas," *Madrid*, 1800–5, is in six large 8vo. volumes.

ally to make his own path; yet so assiduous was he in collecting materials, that in spite of the caution wherewith his results must be adopted, the ethnographer is even at this day obliged to explore his pages for information which further researches have not been able to procure or enlarge. At every step, however, he seems to fear that the study he is pursuing may be turned to the prejudice of revelation. He evidently labors under a great anxiety to prove the contrary; he opens some of his works, and concludes others, with long and elaborate dissertations on this subject.* But his manner of treating it is long and abstract, and his conclusions do not seem to follow easily from the facts which he quotes in evidence. So unsatisfactory, indeed, are the comparisons of words from different languages which he makes on these occasions, that the existence of one letter in common is sufficient with him to form an identity in an entire word.†

Whilst the south of Europe was thus promoting the interests of this science by means of this modest and learned clergyman, in the north it was more brilliantly encouraged by the personal application and patronage of an empress. Among the many literary merits of Catherine II., that of having planned, conducted, and afterwards directed a large comparative work on language, though nowhere

* "Saggio Prattico Origine, Formazione," ec. pp. 156, *seqq*

† See examples in his "Origine," ec. pp. 27, 29, 118, 128 134; and "Vocab. Polig." pp. 33, *seqq*.

mentioned by her English biographer, is far from being the least.* Ample justice has, however, been done to her claims by Frederick Adelung, in a small treatise on this subject. We there learn, upon the authority of her letter to Dr. Zimmerman, that she drew out a list of one hundred Russian words, and had them translated into as many languages as possible. She soon discovered unexpected affinities, and with her own hand began to draw up comparative tables. The doctor's book on "Solitude" superseded this dry task; and accordingly, sending for the naturalist Pallas, she commissioned him to complete her undertaking, and prepare it for publication.† This commission was nowise suited to his taste or previous pursuits; it was imposed upon him against his will, and consequently came forth very imperfect.‡ Under the title of *Linguarum*

* See Tooke's "Life of Catherine II." 5th edition. Neither in the 13th nor in the 17th chapter is there any mention of the Tzarina's or Pallas's researches on this point, though their literary performances are there enumerated.

† "Catherine der grossen Verdienste um die vergleichende Sprachkunde." *St. Petersb.* 1815. This was not the first attempt made in Russia to promote this study. Bacmeister, in 1773, published there a prospectus of a similar work.

‡ We have Pallas's own acknowledgment on this point "Pallas vergleichendes Wörterbuch der europäischen und asiatischen Sprachen, welches er, wie er selbst kurtz vor seinem Tode sagte, *invita Minerva*, und nur auf dringendes Verlangen der Kaiserin Katherine II., nach den von ihr gesammelten und bestellten Hülfsmitteln, eiligst zum Druck beförderte, enthält zwar shätzbare Materialien, die aber ohne alle Kritik zusammengestellt sind."—Klaproth, "Asia Polyglotta:" *Paris*, 1823, p. vii.

totius Orbis Vocabularia Comparativa, Augustissimæ cura collecta, the two first volumes appeared at St. Petersburg, in 1787 and 1789. These contain only the European and Asiatic languages; the third was never published, but in a second edition by Jankiewitsch (1790–91), the African dialects were added.

Europe, thus occupied at its two extremities, received considerable succor from the farthest East. In the year 1784, the Asiatic Society was instituted at Calcutta; through the encouragement whereof the languages of eastern and southern Asia began to be cultivated, and *Grammars* and *Dictionaries* were published of languages and dialects till then almost unknown. The term *Oriental languages*, hitherto confined to the Semitic dialects, now received a far more extensive meaning; Chinese, before considered an almost unconquerable language, began to be studied, till later it was stripped of its difficulties by the sagacity and diligence of the French orientalists; and Sanscrit, peculiarly the province of our countrymen, was cultivated by them with great success, and from them passed into the hands of continental scholars.

But in justice I am bound to say that Rome has the merit of having first seriously attended to the study of Indian literature. John Werdin, better known under the name of Father Paulinus a Sancto Bartholomæo, published, under the auspices of Propaganda, a series of works upon Sanscrit grammar, and upon the history, mythology, and

religion of the Hindoos. He was, even during his life, severely handled by Anquetil du Perron and other French critics, but strenuously defended by his countrymen the Adelungs.* Abel-Rémusat has later still done justice to his reputation, and remarks that his misfortune has been to have his unaided labors eclipsed by the combined exertions of the English society of Calcutta.† It is, further, just to remark that so far from any alarm being felt among learned members of the Church in Italy at the new and then highly mysterious class of literature thus opening before them, they hailed it as the prospect of fresh and important accessions to the proofs of early tradition. This feeling is expressed with peculiar earnestness in a letter from F. Angelo Cortenoris, long a missionary in Ava, to the munificent Cardinal Borgia.‡

I shall now mention only one work more, and so pass from this chronological part of my subject, to lay before you some of its results. I ought perhaps to have already mentioned that, from the time of Chamberlayne, there had been continually a series of publications containing collections of the Lord's Prayer; the most important of which was the one given by Hervas. Something new was

* "Mithridates," vol. i. p. 134, and vol. iv. p. 56.

† In the "Biographie Universelle," vol. xlii. p. 342, ed. *Ven.* 1828, printed also in his "Nouveaux Mélanges Asiatiques," tom. ii. *Paris*, 1829, p. 305.

‡ On the perusal of F. Paulinus's "Amarasinha," dated Udine, June 9, 1799.—Borgia Papers, in the Museum of Propaganda, C.

perhaps given in each, but then each copied the errors of its predecessors. The plan was essentially defective, as intended to show the character of different languages; because a translation of a prayer so peculiar in its form must be more or less constrained in many languages, nor could ever form such a fair specimen as an original composition by a native would present. Then these collections were generally arranged in alphabetical order, and were unaccompanied with any philological or ethnographical illustrations. In fact, instead of improving, the system rather became worse, till, in the hands of Fry, Marcel, and Bodoni, these publications degenerated into a mere piece of typographical luxury, and became only specimens of their skill in making and printing foreign alphabets. One work, however, containing such a collection, forms a most honorable exception, and must be reckoned, in spite of its imperfections, among the most valuable and splendid ethnographic works. I allude to the *Mithridates*, begun by John Christopher Adelung, in 1806. He died before publishing the second volume, which appeared in 1809, under the care of Dr. J. Severinus Vater. Its materials were chiefly drawn from Adelung's papers, and extended to the European languages the researches confined in the first volume to Asia; the third volume, upon the African and American languages, was entirely contributed by Vater, and came out in parts, from the year 1812 to 1816. In 1817, this valuable compilation was completed by

a supplementary volume, containing much additional matter, by Vater and the younger Adelung, besides a most interesting essay on the Cantaber, or Biscayan, by Baron W. von Humboldt.*

In this work, the alphabetical classification is abandoned, and the languages are distributed into groups, or larger divisions, with a minute description and history of each. Lists of works useful for acquiring or examining them are likewise given, together with specimens, consisting principally of the Lord's Prayer. Adelung's views on the origin of languages seem to be that mankind may have invented them in different countries.† Noah's ark, or the tower of Babel, noway enters into his consideration, for he has no favorite hypothesis to maintain;‡ and it would appear that the Paradise whence the human race issued was, in his opinion, the seat of the present generation; thus excluding all interruption, by any great catastrophe, of the earliest history of man.§ With such opinions we have nothing to do at present; they are not given by Adelung as resulting from his valuable researches.

* Dr. Vater died March 28, 1826, at the age of fifty-five. Though he resided at Königsberg and Halle, the "Mithridates" was all published at Berlin.

† Erst. th. Einleitung. Fragmente, u. s. w. p. xi.

‡ "Ich habe keine Lieblingsmeinung, keine Hypothese zum Grunde zu legen. Ich leite nicht alle Sprachen von Einer her. Noah's Arche ist mir eine verschlossene Burg, und Babylon's Schutt bleibt vor mir völlig in seiner Ruhe." —*Ibid.* Vorrede, p. xi.

§ *Ibid.* Einleit. p. 6, comparing pp. 14, 17.

Hitherto we have been occupied with the historical part of our subject, and this has now brought us fairly into our own times. You have therefore a right to expect that, according to my engagement, I lay before you the present state of this science, and show the confirmation which its latest developments have afforded to the scriptural history of man's dispersion.

You have seen then, how, at the close of the last century, the numberless languages gradually discovered seemed to render the probabilities of mankind having originally possessed a common tongue much smaller than before; while the dissolution of certain admitted connections and analogies among those previously known, seemed to deny all proof from comparative philology of their having separated from a common stock. Every new discovery only served to increase this perplexity; and our science must at that time have presented to a religious observer the appearance of a study daily receding from sound doctrine, and giving encouragement to rash speculations and dangerous conjecture. But even at that period, a ray of light was penetrating into the chaos of materials thrown together by collectors, and the first great step towards a new organization was even then taken by the division of those materials into distinct homogeneous masses, into continents, as it were, and oceans; the stable and circumscribed, and the movable and varying element whereof this science is now composed.

The affinities which formerly had been but

vaguely seen between languages separated in their origin by history and geography, began now to appear definite and certain. It was now found that new and most important connections existed among languages, so as to combine in large provinces or groups, the idioms of nations whom no other research would have shown to be mutually related. It was found that the Teutonic dialects received considerable light from the language of Persia; that Latin had remarkable points of contact with Russian and the other Slavonian idioms; and that the theory of the Greek verbs in μι could not well be understood without recourse to their parallels in Sanscrit or Indian grammar. In short, it was clearly demonstrated that one speech, essentially so called, pervaded a considerable portion of Europe and Asia, and stretching across in a broad sweep from Ceylon to Iceland, united, in a bond of union, nations professing the most irreconcilable religions, possessing the most dissimilar institutions, and bearing but a slight resemblance in physiognomy and color. The language, or rather family of languages, I have thus lightly sketched, has received the name of Indo-Germanic, or Indo-European. As this group is necessarily to us the most interesting, and has received most cultivation, I will describe it more at length; confining myself to a few passing observations upon other families. But in tracing the history of this one, you will be fully enabled to see how every new investigation tends still further to cor-

rect the dangerous tendencies of the earlier periods of our science.

The great members of this family are the Sanscrit, or ancient and sacred language of India; the Persian, ancient and modern, formerly considered a Tartar dialect;* Teutonic, with its various dialects, Slavonian, Greek, and Latin, accompanied by its numerous derivatives. To these, as we shall later see, must be now added the Celtic dialects; the enumeration I have made being intended to embrace only the languages early admitted into this species of confederation. By casting your eyes over the ethnographic map which I present you, you will at once see the territory thus occupied; that is, the whole of Europe, excepting only the small tracts held by the Biscayan, and by the Finnish, family, which includes Hungarian; thence it extends over a great part of southern Asia, here and there interrupted by insulated groups. It were tedious indeed to enumerate the writers who have proved the affinity between the languages I have named,†

* Pauw, for instance, mentions the affinity between German and Persian, "qui est un dialecte du Tartare."—Recherches Philos. sur les Américains, vol. ii. p. 303. *Berlin*, 1770. "La lingua Persiana moderna è un dialetto corrotto della Tartaro-Mongola."—Hervas, Catalogo, p. 124.

† See a copious list of the authors who have written in favor of these affinities, in Dr. Dorn, "Ueber die Verwandschaft des persischen, germanischen, und griechischlatienischen Sprachstammes," pp. 91–120: *Hamb.* 1827; and of those who have opposed them, pp. 120–135.

or between two or more members thereof: it will be sufficient for our purpose if I explain rather the methods they have pursued and the results they have obtained.

The first and most obvious mode of proceeding, and the one which first led to these interesting conclusions, was that of which I have often spoken: the comparison of words in these different languages. Many works have presented comparative tables to a very great extent: that of Colonel Vans Kennedy comprises nine hundred words common to Sanscrit and other languages.* The words found thus to resemble one another in different idioms are by no means such as could have been communicated by subsequent intercourse, but express the first and simplest elements of language, primary ideas, such as must have existed from the beginning, and scarcely ever change their denominations. Not to cite the numerals, which would require many accompanying observations; while I pronounce the following words, *pader*, *mader*, *sunu*, *dokhter*, *brader*, *mand*, *vidhava*, or *juvan*, you might easily suppose that I was repeating words from some European language; yet every one of these terms is Sanscrit or Persian. Again, to choose another class of simple words, in such words as *asthi* (Gr. ὀστέον), a bone; *denta*, a

* "Researches into the Origin and Affinity of the principal Languages of Asia and Europe:" *London*, 1828, at the end of the work.

tooth; *eyumen*, the eye, in Zend; *brouwa* (Ger *braue*), eyebrow; *nasa*, the nose; *lib*, a lip; *karu* (Gr. χείρ), a hand; *genu*, the knee; *ped*, the foot, *hrti*, the heart; *jecur*, the liver; *stara*, a star; *gela*, cold; *aghni* (Lat. *ignis*), fire; *dhara* (terra), the earth; *arrivi*, a river; *nau* (Gr. ναῦς), a ship; *ghau*, a cow; *sarpam*, a serpent; you might easily fancy that you heard dialects of languages much nearer home; and yet they all belong to the Asiatic languages I have already mentioned. So far indeed may this comparison be carried, that fanciful etymologists like Von Hammer, will derive such pure English words as *bedroom* from the Persian.*

But this verbal coincidence would have proved by no means satisfactory to a large body of philologers, had it not in due course been followed by a still more important conformity in the grammatical structure of these languages. Bopp, in 1816, was the first to examine this subject with any degree of accuracy; and by a minute and sagacious analysis of the Sanscrit verb, compared with the conjugational system of the other members of this family, left no further doubt of their intimate and primitive affinity;† since which time he has pushed his researches much further, and

* See his comparative tables in almost every number of the "Wiener Jahrbücher," for several years past.

† "Franz Bopp, üper das Conjugazionssystem der Sanskritsprache, in Vergleichung mit jenem der griech, latein. persisch und germanischen Sprache." *Frankfort*, 1816.

commenced the publication of a more extensive work.*

By the analysis of the Sanscrit pronouns, the elements of those existing in all the other languages are cleared of their anomalies; the verb-substantive, which in Latin is composed of fragments referable to two distinct roots, here finds both existing in regular form; the Greek conjugations, with all their complicated machinery of middle voice, augments, and reduplications, are here found and illustrated in a variety of ways, which a few years ago would have appeared chimerical. Even our own language may sometimes receive light from the study of distant members of our family. Where, for instance, are we to seek the root of our comparative *better?* Certainly not in its positive *good*, nor in the Teutonic dialects, in which the same anomaly exists. But in the Persian we have precisely the same comparative بهتر *behter*, with exactly the same signification, regularly formed from its positive به *beh*, good; just as we have in the same language بدتر *badter*, worse, from بد *bad*.

Having brought these two languages into contact, I cannot forbear expressing some surprise at several observations upon the subject contained in the valuable work by Colonel Kennedy, to

* "Vergleichende Grammatik des Sanskrit, Zend, Griechischen, Lateinischen, Littauischen, Gothisch. und Deutschen.' *Berlin*, 1833.

which I have already referred. He says, for instance, that "the slightest examination of Persian grammar must show it radically different from that of German. In neither words, therefore, nor in grammatical structure, do the German and Persian languages possess any affinity."* I cannot conceive how any one who has perused Bopp's work, and still less how any one who has read a hundred pages in the two languages, could deny the marked affinity between their respective grammars. I must at the same time observe, that to institute a fair comparison between them, we must not merely take the German as at present existing, but examine its older forms, as given and proved in Grimm's splendid grammar. We shall there discover, for instance, forms of the verb-substantive bearing the closest relation to the Persian conjugation. But of one part of his assertion the learned author, sixty pages later, affords sufficient confutation, when he tells us that "it must be further remarked, that the only languages in which Sanscrit words exist, are the Greek, Latin, Persian, and Gothic, and the vernacular dialects of India."† Surely this acknowledged affinity of the two languages to a third, whereby they are, as it were, admitted into the family whereof it is the head, as in strict relationship with it, must imply a mutual connection between them. In another place, too, he seems to deny all affinity

* P. 157. † P. 206, also p. 9.

between the Sanscrit and Persian grammars;* and in the passage I have quoted, as well as elsewhere, he clearly excludes the Slavonian from this family, though its rights to enter it are now universally acknowledged. Throughout the course of his interesting work, it is certainly painful to see the author so unwilling to do justice to his predecessors' merits; and the severe censure which he has bestowed upon others, has been naturally enough the measure of consideration shown him in domestic, but still more in foreign, reviews.

You see at once, and I shall have to return again to this subject, how the formation of this vast family greatly diminishes the number of independent original languages; and other great genera, if I may so call them, have been equally well defined. Of the Semitic languages I need not speak; for the intimate relationship between the dialects which form them, the Hebrew, Syro-Chaldaic, Arabic, and Gheez or Abyssinian, has long been acknowledged, and applied to another science so important as to deserve later a particular discourse.† But the Malay, as it has been generally called, presents a similar result in modern ethnography to that of our former investigation. According to both Marsden and Crawfurd, this language or family should be rather called the

* P. 187.

† See the Lecture on "Sacred Oriental Studies."

Polynesian, as the Malay, properly so called, is only one dialect of it, and may be called the *lingua franca* of the Indian Archipelago. In all the languages composing this group, there is a great tendency to the monosyllabic form, and to the rejection of all inflection; thus approximating to the neighboring group of Transgangetic languages, with which, indeed, Dr. Leyden seems to unite them. "The vernacular Indo-Chinese languages on the continent," he writes, "seem to be in their original structure either purely monosyllabic, like the spoken languages of China, or they incline so much to this class, that it may be strongly suspected that the few original polysyllables they contain, have either been immediately derived from the Pali, or formed of coalescing monosyllables. These languages are all prodigiously varied by accentuation, like the spoken language of China."* Now, among these languages he reckons the Bugis, Javanese, Malayu, Tagala, Batta, and others, which are allied not only in words, but in grammatical construction.† Crawfurd, confining his observations within rather narrower limits, comes to the same conclusion. Javanese he considers as presenting most elements of the language which forms the basis of all in this class; and it is peculiarly deficient in grammatical forms,‡ which may be said no less of the Malayan

* "On the Language and Literature of the Indo-Chinese Nations."—Asiat. Res. vol. x. p. 162.

† P. 200.

‡ "History of the Indian Archipelago:" *Edin.* 1820, vol ii. pp. 5, *seqq.* 72, 78, 92, etc.

dialect.* Indeed, he too has recognized so strong a resemblance, not only of words but of structure, in the languages spoken all through the Indian Archipelago, as to warrant their being classed in one family.† Marsden is still more explicit, and extends the limits of the group a good deal further. "Besides the Malayan," says he, "there are a variety of languages spoken in Sumatra, which, however, have not only a manifest affinity among themselves, but also to that general language which is found to prevail in, and be indigenous to, all the islands of the Eastern Sea, from Madagascar to the remotest of Captain Cook's discoveries; comprehending a wider extent than the Roman or any other tongue has yet boasted. Indisputable examples of this connection and similarity I have exhibited in a paper which the Society of Antiquaries have done me the honor to publish in their *Archæologia*, vol. vii. In different places it has been more or less mixed and corrupted, but between the most dissimilar branches an evident sameness of many radical words is apparent, and in some, very distant from each other in point of situation, as for instance the Philippines and Madagascar, the deviation of the words is scarcely more than is observed in the dialects of neighboring provinces in the same kingdom."‡ Thus, again, we have an immense family stretching over a vast portion of

* P. 41. † P. 78.

‡ "History of Sumatra:" *London*, 1811, p. 200

the globe, and comprising many languages which a few years ago were considered independent; and though I have in my map preserved the two perfectly distinct, it would almost appear as if some affinity might be allowed between the Transgangetic and Malayan groups.

This first great step of modern ethnographic science, you will, I am sure, acknowledge to be of great interest and importance, when viewed in reference to the early history of man. Instead of being perplexed with a multiplicity of languages, we have now reduced them to certain very large groups, each comprising a great variety of languages formerly thought to be unconnected, and thus representing, as it were, only one human family, orignally possessing a single idiom. Now every succeeding step has clearly added to this advantage, and diminished still further any apparent hostility between the number of languages and the history of the dispersion. For I have now to show you how further research has deprived new idioms of their supposed independence, and brought them into classes already discovered, or, at least, into connection with distant languages. For example, the march of the Indo-European family was supposed by Malte Brun, in 1812, to be completely arrested in the region of the Caucasus by the languages there spoken, as the Georgian and Armenian; which, to use his own words, "formed there a family or group apart."* But Klaproth,

* "Précis de la Géographie Universelle," tome ii. p. 580

by his journey to the Caucasus, has made it necessary to modify this assertion to a great extent. For he has proved, or at least rendered it highly probable, that the language of one great tribe, the Ossetes or Alans, belongs to the great family I have mentioned.* Again, Armenian, which Frederick Schlegel had formerly considered a species of intermediate language, rather hanging on the skirts of the same group than incorporated therewith,† has been by Klaproth, upon grammatical as well as lexical examination, proved fairly to belong to it.‡ The Afghan or Pushtoo has shared the same fate.§

But the greatest accession which this family has received by means of a diligent and judicious study of the analogies of languages is undoubtedly that of the entire Celtic family, which, with its numerous dialects, must now be content to form only a province of the Indo-European. Balbi, in his Ethnographic Atlas, which I will describe to you later, has placed the Biscayan and Celtic languages in one tableau: not, of course, because he considers them as having anything in common, but because they were apparently out of the pale of those idi-

* "L'analyse de la Langue des Ossètes fera voir qu'elle appartient à la souche Médo-Persane."—Voyage au Mont Caucase, et en Georgie.: *Paris*, 1823, vol. ii. p. 448; see pp. 470, *seqq.*

† "Ueber die Sprache und Weisheit der Indier:" *Heidelb.* 1808, p. 77.

‡ "Asia Polyglotta" p. 99. § *Ibid* p. 57.

oms by which they are surrounded. Colonel Kennedy boldly asserts, "that the Celtic has no connection with the languages of the East, either in words or phrases, or the construction of sentences."* But a still later writer has discussed the question with all the forms of the exploded school, and endeavored to examine the origin of the Celtic nations, by processes which on the continent are almost forgotten. I allude to the work entitled "The Gael and the Cymbri." † To deny it the praise of ingenuity and curious research would assuredly be unjust; but the two great ethnographical points therein treated, the radical difference between the Welsh and Irish languages, and the Phenician or Semitic origin of the latter, are certainly managed with all that unsatisfactory display of etymology which has been long since rejected from this study. If we wish to establish the Irish language as a Phenician dialect, the process is very simple. We know from the most undoubted sources that the Phenician and the Hebrew were two sister dialects: compare, therefore, the grammatical structure of this language and Irish, and the result will solve the problem. Now, instead of this simple method, see how our author proceeds. The names of places on the Spanish and other coasts, were given by the Phenicians; now these names can all be explained in Irish. Therefore the Irish and Phenician languages are identical. A few years

* *Ubi sup.* p. 85.

† By Sir W. Betham. *Dublin*, 1834.

ago, an eminent geographer published an essay in a French journal,* wherein he, by a similar process, derived many African names of places from Hebrew, so as to establish their Phenician origin. Klaproth, in a letter under the Danish name of Kierulf, confuted these etymologies by proposing two new ones for each name, the one from Turkish, the other from Russian.† This may suffice to show how unsatisfactory such processes are. For the author never takes the pains to prove that the character of the places corresponds to the Irish interpretation of their names. To examine his etymologies in detail would be indeed tedious; but I cannot refrain from taking a few examples at random. Some names which we know to be Phenician, and which correspond in that language to the exact character of the places they represent, must go to Irish to receive new ones, which will do as well for any other. Thus Tyre, in Phenician, צור *Tzur*, a rock, a meaning to which allusion is frequently made in Scripture, is derived, according to him, from *Tir*, a land or city; when we might just as well derive it from the Chaldaic טיר *Tir, a palace.* Palmyra and Tadmor, which are exact translations of one another, meaning the city of palms, must be derived from Irish words; the one meaning the

* "Nouvelles Annales des Voyages," Feb. 1824.

† In an appendix to his "Beleuchtung und Widerlegung der Forschungen, u. s. w. des Herrn J. J. Schmidt." *Paris* 1824.

palace of pleasure,* the other the *great house;* and Cadiz, or *Gadir*, as it was originally called, must no longer signify, as the word does graphically in Phenician, *the island* or *peninsula;* but after the Irish word *cadaz*, which only resembles the modern corruption of the name, must signify *glory*.† Again, taking a set of names, not of places but of people, ending by a common adjective termination in *tani;* these are cut in two, and the termination is made to be the Irish word *tana*, country. I might just as well go to the Malayan for their interpretation; for there also *tanah* means a country, as Tanah Papuah, the country of the Papuas.‡ But just let us take one example: *Lacetani* means according to our author, *the country of milk*. Why not, therefore, from *lac*, milk, by a regular formation, derive *lacetum*, like *spinetum*, or *rosetum*, a place abounding in milk; and so again, in regular order *Lacetani*, the inhabitants of such a country. Surely, if we are to make such etymologies, is not this more regular than the Irish one, *lait* milk, *o* of, *tana* country?§ But suffice it to say that Latin, Biscayan, and even Spanish words, suffer strange changes into Irish to work out this untenable hypothesis.‖ Then, as to the grammati-

* The word *palas* is manifestly identical with palace, *palatium*, the Palatine hill, then the residence of the Cæsars, and so a *palace*. How did the Phenicians possess it?

† Pp. 100, 104.

‡ See "Trans. of R. A. S." vol. iii. p. 1, 1831. § P. 104.

‖ For instance we are told that *Llanes* comes from *lean*,

cal analysis proposed in this work, to prove that Welsh and Irish have nought in common, I must say that, in spite of its obscurities, it produced on my mind exactly a contrary impression, and seemed to me to prove, before I had seen the valuable work to which I shall just now refer, that both belonged to the same family, and that the Indo-European.

I may have appeared to you more full and severe in my remarks upon this work than my subject required; but I will own that, more than once, I have been exposed to the mortification of hearing our English ethnographers blamed, as falling far below the advanced position of foreign philologers; and assuredly, when, after perusing the learned, judicious, and satisfactory inquiries of Baron Humboldt, from the Biscayan, into the very names so disfigured in this book, and admiring the sound philosophical and philological principles which guide him at every step,* we take up a work published since his, and going over the same ground, upon a system of fanciful etymologies derided to scorn by continental linguists, it is hard

a swampy plain, while *llano* in Spanish is the strict representation of *planus*, and means precisely the same. Puenta Rio de la (Rio de la Puenta), from *pointe*, a point (again of Indo-Germanic origin), and not from the Spanish *puente*, a bridge. Cantabri means *heads high above!* etc. (pp. 107, 109, 111).

* In his interesting "Prüfung der Untersuchung über die Urbewohner Hispaniens." *Berlin*, 1821. Compare Sir W. Betham's derivation of Asturias from *as*, a torrent, and *sir*, a country (p. 106), with the learned German's disqu'sition on that name as found in Spain and Italy, p. 114.

to forbear feeling a lively regret that we should be subject to the reproaches of our neighbors, and that what they have already done should be apparently overlooked among us. When we are obliged to put forward as our greatest ethnographer, one who, like Dr. Murray, blends the rarest erudition with the most ridiculous theories—who, with a profound knowledge of many languages, maintains that all those of Europe have their origin from nine absurd monosyllables, expressive of different sorts of strokes:* when a philosopher held greatly in respect by his school, so late as 1827, speaks of the affinity between Greek and Sanscrit as something new and strange: refers to "a German publication of Francis Bopp," and an "Essay on the Language and Philosophy of the Indians, by the celebrated Mr. F. Schlegel," as works yet unknown to us except through the quotations of a review; mentions Gebelin, De Brosses, and Leibnitz, as the best authorities upon these studies; and occupies many pages in attempting to prove that Sanscrit is a *jargon* made up from Greek and Latin, and illustrates his position from *kitchen-Latin* and *macaronic verses*:† when a learned linguist professes to

* These are:—1. *ag, wag, hwag.* 2. *bag* or *bwag.* 3. *dwag.* 4. *cwag.* 5. *lag.* 6. *mag.* 7. *nag.* 8. *rag.* 9. *swag.* "History," etc. *ut sup. p.* 31. "By the help of these nine words and their compounds, all the European languages have been formed!" (p. 39).

† These observations will all be found in Dugald Stewart's "Elements of the Philosophy of the Human Mind," vol. iii. *London*, 1827, pp. 100-137.

prove the conformity of the European with Oriental languages, and for that purpose confuses together primary and derivative, ancient and modern Semitic and Indo-European words; giving such terms from the Arabic as *astrolabe* and *melancholy*, which it, as well as we, received from the Greeks;* when, in short, in the very last year, we have a divine, I believe of some celebrity, bringing this very study to bear upon the Mosaic history, by completely overlooking all its modern results, and considering the Teutonic, Greek, and Semitic as forming the three principal ethnographic reigns; telling us that "the construction of the three great families of language, the Oriental, the Western, and the Northern, is actually so distinct that a new wonder arises from the perfect adequacy of each to perform all the purposes of human communication:"† when we see so many others among us, whom it would be long to enumerate, pertinaciously clinging to the old dreams of Hebrew etymologies,

"Trattando l'ombre come cosa salda,"

we cannot but feel that the reproach made against us is but too well grounded, that we have neglected

* See "A Specimen of the Conformity of the European Languages, particularly the English, with the Oriental Languages." By Stephen Weston, B. D. *London*, 1802.

† "Divine Providence; or, the Three Cycles of Revelation," by the Rev. G. Croly, LL.D. *London*, 1834, c. xxii. p. 301. Nothing can be more incorrect than the description which follows this passage of the characteristics of each family so formed.

to keep pace with the progress of this science upon the continent; and be keenly mortified when we meet, instead of amendment, another repetition of what has heretofore justified the charge.

But from this unpleasant and unwilling censure, which I trust will not be often called for in the course of our meetings, I am agreeably recalled by a work to which I am happy to say I can give unqualified praise:—

—— *χαίρω δὲ πρόσφορον*
Ἐν μὲν ἔργῳ κόμπον ἰείς;*

and which leads us back to the matter whence we have so long digressed. For you may perhaps have almost forgotten that we were discussing the propriety of uniting the Celtic dialects to the Indo-European family. This question may be now considered as fairly set at rest, by the valuable and intersting work of Dr. Prichard, *On the Eastern Origin of the Celtic Nations.*† In an earlier publication, to which I shall, on a future occasion, have to refer very frequently, he had entered into a partial analysis of the Welsh numerals and verbs, and concluded that the admission of this language into the family so often named, "would have been allowed if it had undergone a similar investigation to the others, from persons competent to form an opinion on its analogies."‡ But in the present work

* Pindar, Nem. viii. 82. † Oxford, 1831.

‡ "Researches into the Physical History of Man:" *London*, 1826, vol. ii. p. 168; comp. p. 622.

he has put the affinity of the Celtic with the Indo-European languages above all doubt. First, he has examined the lexical resemblances, and shown that the primary and most simple words are the same in both, as well as the numerals and elementary verbal roots.* Then follows a minute analysis of the verb, directed to show its analogies with other languages; and they are such as manifest no casual coincidence, but an internal structure radically the same. The verb-substantive, which is minutely analyzed, presents more striking analogies to the Persian verb than perhaps any other language of the family.† But Celtic is not thus become a mere member of this confederacy, but has brought it most important aid; for from it alone can be satisfactory explained some of the conjugational endings in the other languages. For instance, the third person plural of the Latin, Persian, Greek, and Sanscrit, ends in *nt*, *nd*, *ντι*, *ντο*, and *nti* or *nt*. Now, supposing with most grammarians, that the inflections arose from the pronouns of the respective persons, it is only in Celtic that we find a pronoun that can explain this termination. For there, too, the same person ends in *nt*, and thus corresponds

* Pp. 36–88. It may however, be worth while observing, that Jäkel has shown all the words given by the ancients as Celtic, to be German. "Der germanische Ursprung der lateinischen Sprache." *Bresl.* 1830, p. 11. Does this arise merely from family affinity, or from confusion in the ancients, who took little pains to study what they deemed barbarous languages?

† See pp. 171, *seqq.*

exactly, as do the others, with its pronoun *hwynt*, or *ynt*.*

This circumstance certainly gives Welsh an important place among the languages composing this great family. It must not, however, thereby receive any undue advantage over the others, or be considered as approaching nearer to the original stock. For this is yet an important problem to be solved, to ascertain, that is, the order of filiation, if it exist, or the rights of primogeniture, among its members. Sanscrit, instead of the made-up jargon it was supposed to be by Stewart, is considered by most ethnographers the oldest and purest form; Latin resembles it in many respects more than Greek, and yet Jäkel has lately endeavored to prove that it is derived through Teutonic. He has, indeed, brought many examples of Latin words which want their signification, unless we recur to German; as *fenestra*, which through the cognate word *fenster* is explained from *finster*, dark, having originally signified, according to him, the shutters or lattice; and of others which have no roots except there; such as *præsgire* and *sagus*, which find in German the verb *sagen*, whence *wahrsagen*, for sufficient root.† Such speculations must not, however, be indulged in too much; for a root once common to both languages may have been lost in one, and preserved in another, though both are independent in descent. Thus we are every mo-

* Pp. 130–138. † *Ubi sup.* p. 13.

ment obliged to recur to the Arabic for roots now wanting in Hebrew; yet no one would thence conclude the Arabic origin of the Hebrew tongue. Minute grammatical analysis will alone put us in possession of correct conclusions upon this subject.

While the Indo-European family is thus gradually more rounded as well as increased in its territorial limits, and the number of its members daily increases, other languages, the connections whereof were not formerly known, have been found allied to others separated by considerable tracts of country, so nearly as to form with them a common family. I will content myself with one instance in Europe. Towards the close of the last century, Sainovic, followed by Gyarmathi, proved that Hungarian, which lies like an island surrounded by Indo-European languages, belongs essentially to the Finnish or Uralian family,* which stretches downwards, as it were, through the Esthonian and Livonian, to join it.† In Africa, too, the dialects whereof have been comparatively but little studied, every new research displays connections between tribes extended over vast tracts, and often separated by intermediate nations; in the north between the languages spoken by the Berbers and Tuariks, from the Canaries to the

* "Sainovii Demonstratio Idioma Ungarorum et Lappon um idem esse." *Copenhag.* 1770. "Gyarmathi, Affinitas Linguæ Hungaricæ cum Linguis Fennicæ originis, grammatice demonstrata." *Götting.* 1799.

† See the "Ethnographic Map," prefixed to this volume.

Oasis of Siwa; in central Africa, between the dialects of the Felatahs and Foulas, who occupy nearly the whole interior; in the south, among the tribes across the whole continent, from Caffraria and Mozambique to the Atlantic Ocean.*

But it is time that we should pause; first looking back upon what we have hitherto gained, thence to take augury for those more interesting results which will occupy our next meeting. We have seen, then, the learned world slumbering contented with the hypothesis that the few languages known might be all resolved into one, and that one probably the Hebrew. Aroused by new discoveries which defied this easy vindication of the Mosaic history, they saw the necessity of a totally new science, which should dedicate its attention to the classification of languages. At first it seemed as though the infant science was impatient of control, and its earliest progress seemed directly at variance with the soundest truths. Gradually, however, masses which seemed floating in uncertainty came together, and like the garden islands of the Mexican Lake, combined into compact and extensive territories, capable and worthy of the finest cultivation. The languages, in other words, grouped themselves into various large and well-connected families, and thus greatly reduced the number of primary idioms from which others have sprung. And after this, we have seen how every succeeding research, so far

* See Prichard, *ubi sup.* p. 7.

from weakening this simplifying result, has, on the contrary, still further strengthened it, by ever bringing new tongues, thought before to be independent, into the limits of established families, or uniting into new ones such as promised little or no affinity. Such are the two first results of this science, and I will reserve for another day its further advance.

But before closing this lecture, I may not withhold a few reflections suggested to me by looking back on the sort of inquiry I have therein followed. For, when I consider how many different men have labored almost unwittingly to produce the results I have laid before you—one for no sensible purpose hunting out the analogies of this speech; another, that knew not wherefore, noting the dialects of barbarous tribes; a third comparing together, for pastime, the words of diverse countries—when I see them thus, all like emmets bearing their small particular loads or removing some little obstruction, and crossing and recrossing one the other, as though in total confusion, and to the utter derangement of each other's projects; and yet when I discover that from all this there results a plan of exceeding regularity, order, and beauty, it doth seem to me as though I read therein signs of a higher instinct, and of a directing influence over the thoughtless counsels of men, which can bring them unto great and useful purposes. And such methinks is to be found in the history of all sound learning. For, as a day appearing now and then of brighter and warmer sunshine doth foreshow that the full

burst of summer's glory is about to break upon the earth, so do certain privileged minds, by some mysterious communication, ever foresee, as it were, or rather feel sometime beforehand, and announce the approach of some great and new system of truth; as did Bacon, of Philosophy; and Leibnitz, of our science; and Plato, of a holier manifestation. Then arise, and come in from all sides, we know not how, workmen and patient laborers, like those who cast down faggots under a foundation, or raise stones thereon; whom no one takes for the architects or builders of the house, for they know and comprehend nought of its plans or objects; and yet every stone which they place fitteth aright, and adds to the usefulness and beauty of its parts. And so, after this fashion, by the work of many conjoined, though not combined in any plan, a science is builded up in fair proportions, and seemeth to stand well and in its proper place among the others already raised; and so at length cometh to be a joint, as it were, in the general fitness of things, and a maxim in the universal truth, and a tone or accord in the harmony of nature.

Now I cannot persuade myself that there is not an overseeing eye in this ordering of things dissimilar to one great end, when I see that this great end is the confirmation of God's holy word; but rather of this seeming human industry I would say with the divine poet:—

"Lo Motor primo a lui si volge lieto,
Sovra tant' arte di natura, e spira

Spirito nuovo di virtú repleto
Che ciò che truova attivo quivi, tira
In sua sustanzia e fassi un' alma sola
Che vive e sente, e sè in sè regira."*
DANTE, *Purgat*, XXV.

Not that He partaketh in the errors and follies of such as labor in these pursuits; but as He useth the evils of this world for the most holy purposes, and unfolds often therefrom the most magnificent passages of His blessed providence, so may He here overrule and guide even the ill-intended labors of many, and so dispose thereof, as that a new and beautiful light may come forth upon His truths, when such is most truly needed.

Thus would I consider the rise and development of any new science, as entering essentially into the established order of God's moral government; just as the appearance, from time to time, of new stars in the firmament, according to what astronomers tell us, must be a pre-ordained event in the annals of creation. And if you agree with me in these reflections, you will also methinks feel as I do, that in tracing the history of any pursuit, we are not so much indulging a fond

*———"Then turns
The Primal Mover with a smile of joy
On such great work of nature; and imbreathes
New spirit replete with virtue, that what here
Active it finds, to its own substance draws;
And forms an individual soul that lives,
And feels, and bends reflective on itself."
CARY'S *Translation*.

curiosity, or following the progress of man's ingenuity, as watching the beautiful courses whereby God hath gradually removed the veil from before some hidden knowledge, first lifting up one corner thereof, then another, till the whole is rolled away: and you will with me delight in studying the purposes and applications thereby intended, both towards our humble instruction and His increasing glory.

LECTURE THE SECOND;

ON THE

COMPARATIVE STUDY OF LANGUAGES.

PART II.

SUMMARY OF RESULTS exposed in the preceding Lecture.—*Continuation.—Third:* Relationship between the different families.—Present state of the study; its two principal Schools, founded on the comparison of words, and of grammatical forms.—Remarks directed towards reconciling them.—Errors regarding the supposed power of development in languages; opinion of Humboldt.—Power of external circumstances to alter the grammatical structure of a language. Proposed rule for the comparison of words. Dr. Young's application of the calculus of probabilities to the discovery of the common origin of two languages, by a comparison of words.—Lepsius on the affinities between Hebrew and Sanscrit.—His further and inedited researches into the connection between Hebrew and ancient Egyptian.—Proposed comparison of Semitic and Indo-European grammatical forms (referred to a note).—Conclusions of modern Ethnographers.—*First:* That all language was originally one; Alex. von Humboldt, Academy of St. Petersburg, Merian, Klaproth, Fred. Schlegel.—*Secondly:* That the separation was by a violent and sudden cause: Herder, Turner, Abel-Rémusat, Niebuhr Balbi.

AMERICAN LANGUAGES.—Difficulties arising from their multiplicity.—Attempts of Vater, Smith-Barton, and Malte-

Brun, to trace them to Asiatic languages.—Unity of family proved by similarity of grammar; subdivision into groups.—Their number accounted for by the experience of the science; confirmation of their Asiatic origin from other coincidences.—General remarks on the providential connection of the different states of religion with different families of languages.

Albeit, in my last discourse, after leading you through a compendious history of philological ethnography in ages past, I brought you into our own times, and endeavored to make you acquainted with the labors of many who yet live; nevertheless, I may be said to have there only given you the proem, as it were, or introduction to the modern study, and to the principles whereon it is conducted. For, such was the abundance of matter furnished by my theme, that, after all convenient abridgment used, I saw myself compelled either to abuse your patience by too long a discourse, or divide my subject, to the disparagement of its better understanding. And so, choosing this part, which threw the difficulties upon myself rather than upon those who so courteously attend me—

"Contro il piacer mio per piacerli,
Trassi dell' acqua non sazia la spugna."

In requital for this, I must request you to summon back to your recollection the chiefest points whereof we seemed to have gained sufficient evidence; and these are, that the comparative study of languages has brought into certain relationship

many which heretofore had seemed divided in sunder, forming thereof great groups or families, so that nations and tribes covering vast tracts of territory are in this study accounted as only one people; and that its subsequent researches tend in every instance to diminish the number of independent languages, to widen the pale of these larger provinces, and to bring the number of original stocks much nearer to what might be supposed to have arisen on a sudden, among the few inhabitants of the earlier world.

The next important point to be ascertained is, whether any relationship can be discovered between languages of different families, so as to deduce that they have once been in closer connection than at present; in other words, that they descend from a common stock. Now, the inquiries which have been carried on to ascertain this delicate and important point, are so intimately connected with the present state of the study, and the schools into which it is divided, that it becomes absolutely necessary for us to interrupt our course, and examine this actual condition of philological ethnography; if, indeed, we are to call an interruption what essentially enters into the design of our original plan. As one of the schools sets but little value upon the methods pursued by the other, and consequently upon the results thence gained, it would be unjust to receive them as undisputed; and I should be deceiving you were I to lay before you these results as the uncontested

discoveries of the science, or without explaining how far they may be considered satisfactory. Two things I will premise; first, that so far as we have proceeded, all agree, so that the results I have laid before you may be considered as quite placed out of doubt; secondly, that you will find we have suffered nothing, or rather have gained, by the severer principles which one school has adopted.

The principal ethnographers of modern times may be divided into two classes; one whereof seeks the affinity of languages in their words, the other in their grammar; their methods may be respectively called, *lexical* and *grammatical* comparison. The chief supporters of the first method are principally to be found in France, England, and Russia; such as Klaproth, Balbi, Abel-Rémusat, Whiter, Vans Kennedy, Gaulianoff, the younger Adelung, a d Merian. In Germany, Von Hammer, and perhaps Frederick Schlegel, might be considered as of the same school. The principle followed by these writers may be perhaps summed up in the observation made somewhere by Klaproth, that "words are the stuff or matter of language, and grammar its fashioning or form." And in a work by the late Baron Merian, which Klaproth edited, we have all the principles whereon he and his school conduct the study clearly and systemically laid down, with all the results they have thence deduced.* The other class is confined in

* "Principes de l'Etude comparative des Langues." *Paris*, 1828.

a great measure to Germany, and reckons W. A. von Schlegel and the lamented Baron W. von Humboldt among its most distinguished chiefs. No one has been more explicit or more energetic in denouncing the principles of the other school than the first of these two writers. "Viri docti," says he, "in eo præcipuè peccare mihi videntur, quod ad similitudinem nonnullarum dictionum qualemcumque animum advertant, diversitatem rationis grammaticæ et universæ indolis plane non curant. In origine ignota linguarum exploranda, ante omnia, respici debet ratio grammatica. Hæc enim à majoribus ad posteros propagatur; separari autem à lingua cui ingenita est nequit, aut seorsum populis ita tradi ut verba linguæ vernaculæ retineant, formulus loquendi peregrinas recipiant."* Here you see that we have two most important assertions; that grammar is an essential inborn element of a language; and that a new grammar cannot be separately imposed upon a people; but that if they accept the forms, they must adopt also the matter of a language.

Having thus stated the opinions, or rather the principles, of these two schools, I will proceed to lay before you such reflections and conclusions as I have been led to in the prosecution of this study; hoping, that as they are presented with all becoming diffidence, they may be still somewhat

* "Indische Bibliothek," 1 Band, 3 Heft. *Bonn*, 1822, pp. 285, 287. In the first number (1820) he expresses himself in still stronger terms.

useful, towards narrowing the difference between the schools I have described.

First, then, I will say that authors are often mistaken when they attempt to analyze a language, with a view of ascertaining its primitive form. Nothing is more common than to find, in very judicious writers, the idea that there is in languages a tendency to develop and improve themselves; like Horne Tooke or his adversary, they lead us back to periods when every auxiliary verb had its real meaning,* and when every conjunction was an imperative. Murray, in like manner, speaks of the stage of languages when compounds and pronouns were first invented;† and indeed pretends, as I have mentioned at our last meeting, to trace all languages to a few absurd and jingling monosyllables. I will give an example which will fully explain my meaning. If we analyze the Semitic languages, especially the Hebrew, we can easily resolve all their conjugational system into mere additions of pronouns, made to the simple elementary form of the verb; and you may discover in their words, the traces of monosyllabic, instead of dissyllabic roots, which they now present. We should thus have a simple language composed of the shortest words, totally devoid of inflection, and determining the value of its elements by position in a sentence; in other words, a language, in

* See, for instance, Fearn's "Anti-Tooke," vol. i. *London*, 1824, p. 244.

† "History," etc. vol. i. p. 41.

structure, closely resembling the Chinese. This, certainly, considered in reference to the actual state of the family, would be a more simple, or a primary state, from which the present might be thought to have arisen by the gradual development of many ages; and, in fact, learned men have not been wanting who so thought.* Now from this opinion, which I confess I once held, I must totally dissent: for hitherto the experience of several thousand years does not afford us a single example of spontaneous development in any speech. At whatever period we meet a language, we find it complete as to its essential and characteristic qualities; it may receive a finer polish, a greater copiousness, a more varied construction; but its specific distinctives, its vital principle, its soul, if I may so call it, appears fully formed, and can change no more. If an alteration does take place, it is only by the springing up of a new language, phœnix-like, from the ashes of another; and even where this succession has happened, as in that of Italian to Latin, and of English to Anglo-Saxon, there is a veil of secrecy thrown over the change;

* The reasoning whereon this theory rests is so obvious to all that are acquainted with these languages, that it is only a wonder that more authors have not pursued it. (See Adelung's "Mithridates," tom. i. p. 301; Klaproth, "Observations sur les Racines des Langues Sémitiques," at the end of "Merian's Principes," p. 209). To these I might add the authority of professed Hebrew scholars; as Michaelis, Gesenius, Oberleitner, etc.

the language seems to spin a web of mystery round itself, and enter into the chrysalis state; and we see it no more till it emerges, sometimes more, sometimes less, beautiful, but always fully fashioned, and no further mutable. And even there we shall see that the former condition held already within itself the parts and organs ready moulded, which were one day to give shape and life to the succeeding state.*

The two languages which I have just mentioned, as to their essential features, or rather their personality and principle of identity, are as perfect in the oldest as in the latest writers. Of Dante, or the Guidos, I need not speak; but our Chaucer, too, assuredly found in his native tongue as fully-stringed and as sweetly-attuned an instrument whereon to sing his lay, as Wordsworth himself could desire. So it is with the Hebrew: in the writings of Moses, and in the earlier fragments incorporated into Genesis, the essential structure of the language is complete, and apparently incapable, in spite of its manifest imperfection, of any further improvement. The ancient Egyptian, as

* Thus a very slight study of the decline of Latin will show us the words now pure Italian becoming common; as *pensare*, to think, in the writings of St. Gregory; or the preposition *de* for the genitive. Such forms were all doubtless common long before among the vulgar. In rude sepulchral inscriptions, we have the SS for the X, as BISSIT for VIXIT; nay, I remember one instance where this verb is written as in Italian (excepting the change of V into B), BISSE.

written in hieroglyphics upon the oldest monuments, and in the Coptic of the liturgy, after an interval of three thousand years, you will see established by Lepsius to be identical. The same will be observed upon comparing the oldest with the latest Greek or Latin writers. The case of the last is particularly striking, if we consider the opportunity of improvement afforded it by coming in contact with the former. But though the conquest of Greece brought into rude Latium sculpture and painting, poesy and history, art and science; though it rounded the forms of its periods, and gave new suppleness and energy to its language, yet did it not add a tense or declension to its grammar, a particle to its lexicon, or a letter to its alphabet.

For in sooth we may lay it down as a principle, that no nation, from a sense of defect in its present language, will, under ordinary circumstances, borrow from another, or produce any new germs within itself. How comes it else, that Chinese, so devoid of grammatical construction, that it seems the very copy of the forms of thought expressed in signs by the deaf and dumb,* has never contrived

* The deaf and dumb cannot be brought to use the grammatical gestures invented for them by the Abbé Sicard, but content themselves with the simple signs of ideas, leaving the structure undetermined by any but the natural order of connection.—(See Degerando, "De l'Education des Sourds muets." *Paris*, 1827, tom. i. pp. 580, 588.) The following is the literal translation into words of the Our Father, as express-

to frame, what we consider indispensable to the understanding of speech? Why have the Semitic languages, after thousands of years' neighborhood with languages of other families, never generated a present tense, or compound and conditional tenses and moods, the want whereof so much perplexes their discourse and writing; or invented some new conjunctions to relieve the copulative *vau* from the burthen of expressing all possible relation between the parts of a discourse? Nay, how comes it that, after ages of contact with more perfect alphabets, and fully owning the immense difficulties of one without vowels, those who speak them have never succeeded in introducing them here, but resort, to this day, to the clumsy expedient of troublesome points? And the one which has attempted a change, the Abyssinian, has only produced a more unnatural and complicated syllabic alphabet, full of trouble, and liable to innumerable mistakes. Were there such a thing as natural development in languages, surely so many ages must have produced it in these instances. But so far from this being the case, the earlier stages of a language are often the most perfect; and the late researches I have so often referred to, made by Grimm into the primi-

ed by them in signs. 1. *Our*, 2. *Father*, 3. *heaven*, 4. *in* (sign of insertion), 5. *wish* (sign of drawing or attracting), 6. *your* (you), 7. *name*, 8. *respect*, 9. *wish*, 10. *your*, 11. (over) *souls*, 12. *kingdom*, 13. (that is) *providence*, 14. *arrive*, 15. *wish*, 16. *your* 17. *will*, 18. *do*, 19. *heaven*, 20. *earth*, 21, *equality* (in like manner as), (p. 589).

tive forms of German grammar, are far from establishing the tendency of a language to improve; for many valuable forms have been therein lost.

To speak, therefore, of the secondary stages of a language, or to suppose it must have required centuries for it to arrive at any given point of grammatical development, is perfectly against experience. Languages grow not up from a seed or a sprout; they are, by some mysterious process of nature, cast in a living mould, whence they come out in all their fair proportions; and that mould is the mind of man, variously modified by the circumstances of his outward relations. Here again I cannot but regret our inability to comprehend in one glance the bearings and connections of different sciences; for, if it appears that ages must have been required to bring languages to the state wherein we first find them, other researches would show us that these ages never existed; and we should thus be driven to discover some shaping power, some ever-ruling influence, which could do at once what nature would take centuries to effect; and the book of Genesis hath alone solved this problem.

Although I may have already appeared to you diffuse upon this subject, I must not leave it without giving what I consider the strongest confirmation of my opinions, the judgment of the truly lamented William von Humboldt. This profound linguist, perhaps beyond any other, brought a spirit of analytical inquiry in contact with a vast store of practical ethnographic knowledge, and

used the study of languages in a way that few have done besides, as a means to arrive at a better acquaintance with the forms of thought, and with the processes of mental improvement. And if to valiant knights it has been a praise that they loved to die with their harness buckled on, and if it has been a glory to some orators that their eloquence burnt with a brighter flame just before it was quenched forever; assuredly his is a fairer commendation, to have given the best proof of the calm power of thought over the infirmities of our nature, and shown, almost in death, the concentrating hold which genius may keep upon the elements of a long and meditative life. For long ago he had announced to his friends his intention of drawing up, as his last legacy, a very compendious treatise upon the philosophy of language; and so, within these few months, the last of his life, reduced by illness to such a state of miserable weakness, as that he could now no longer hold in his hand either pen or book; bending over his table as one bowed down by years, he seemed to gather inward those varied energies which in earlier days had qualified him alike for a philosopher or a statesman; and dictated a profound work upon that most difficult subject, which, when published, will give to the world a noble instance, not of the ruling passion, but of the governing intellect, strong in death.

When upon the advice of Abel-Rémusat, he had made himself acquainted in a short period

with the Chinese language, he lost no time in requiting him by a most interesting letter upon grammatical forms. Not having met with this work till long after I had written down the reflections I have just made, I have been highly gratified by finding in it precisely the same views, though far more philosophically expressed. "Je ne regarde pas les formes grammaticales," he says, "comme les fruits des progrès qu'une nation fait dans l'analyse de la pensée, mais plutôt comme un résultat de la manière dont une nation considère et traite sa langue."* He observes, that in the Maya and Betoi, two American languages, there are two forms of the verb; one that marks time, the other simply the relation between the attribute and the subject. This appears highly philosophical, yet he well observes, "ces rapprochemens peuvent, ce me semble, servir, à prouver que, lorsqu'on trouve de pareilles particularités dans les langues, il ne faut pas les attribuer à un esprit éminemment philosophique dans leurs inventeurs."† I will take the liberty of reading one more extract, as admirably expressing what I have wished to inculcate. "Je suis pénétré de la conviction qu'il ne faut pas méconnaître cette force vraiment divine que recèlent les facultés humaines, ce génie créateur des nations, surtout dans l'état primitif, où toutes les idées, et même

* Lettre à M. Abel-Rémusat, sur la Nature des Formes Grammaticales," etc., par M. Guill. de Humboldt. *Paris*, 1827 p. 13. † P 15.

les facultés de l'âme, empruntent une force plus vive de la nouveauté des impressions, où l'homme peut pressentir des combinaisons auxquelles il ne serait jamais arrivé par la marche lente et progressive de l'expérience. Ce génie créateur peut franchir les limites qui semblent prescrites au reste des mortels, et s'il est impossible de retracer sa marche, sa présence vivifiante n'en est pas moins manifeste. Plutôt que de renoncer, dans l'explication de l'origine des langues, a l'influence de cette cause puissante et première et de leur assigner à toutes une marche uniforme et mécanique, qui les traînerait pas à pas depuis le commencement le plus grossier jusqu'à leur perfectionnement j'embrasserais l'opinion de ceux qui rapportent l'origine des langues à une révélation immédiate de la divinité. Ils reconnaissent aux moins l'étincelle divine qui luit à travers tous les idiomes, même les plus imparfaits, et les moins cultivés."* Thus, therefore, does this distinguished ethnographer agree that languages do not reach their peculiar development, as it is erroneously called, by slow degrees, but receive it from some unknown energy of the human mind; unless, like the first speech, we suppose them to have been communicated from above.

Having thus denied the power of languages to produce of themselves, and under ordinary cir-

* P. 55, compare p, 51. See also the quotation in Lect. i. p. 10, note.

cumstances, even to alter their grammatical structure; and considering this not merely as the outward form of a language, but as its most essential element, we may well inquire how far Schlegel is correct, in assuming that under no circumstance can such a modification or change take place; and I will take the liberty of saying, that some instances seem to warrant us in maintaining, that under the pressure of peculiar influences, a language may undergo such alterations as that its words shall belong to one class, and its grammar to another. It is true that in that case a new language will be formed, different from either of its parents, but still it will depart from the one which preceded it, by the adoption of new grammatical forms. Thus, Schlegel himself allows that Anglo-Saxon lost its grammar by the Norman conquest.* And may we not say that Italian has sprung out of the Latin, more by the adoption of a new grammatical system, than by any change in words? For if you will compare any works in the two languages, you will hardly perceive any difference in the verbs and nouns: but you find articles borrowed from the pronouns, a total loss of case, and consequently of all declension; and the verbs conjugated almost entirely by auxiliaries in the active voice, and totally deprived of a passive, properly so called. These, in fact, are the alterations which entitle it to be con-

* "De Studio Etym." *ubi sup.* p. 284.

sidered a new language. It is true, that in this case the language has not gone out of its own family for the types of its variations; for these peculiarities are all to be found in other languages of the Indo-European class, as German and Persian; but it is no less true that the change is very great, and allies the new language to another subdivision, which forms one extreme, while the Latin is almost the other, of the family.

The ancient Pehlwi or Pahlavi has been supposed by some linguists to present a similar example: for Sir W. Jones observed that the words are Semitic, but the grammar Indo-European;* and hence Balbi has placed it in his *Tableau* of the Semitic languages. The fact is partly admitted, but the consequences denied, by Dr. Dorn, who supposes the Semitic words to have crept into the language by intercourse with the surrounding Aramean nations.† Another curious example of a similar phenomenon may be taken from the Kawi, a language of the Indian Archipelago; of which Mr. Crawfurd thus writes: "Were I to offer an opinion respecting the history of the Kawi, I should say that it is Sanscrit deprived of its inflections, and having in their room the prepositions and auxiliary verbs of the vernacular dialects of Java. We may readily suppose the native Brahmans of that island, separated from the country of their ances-

* "Asiatic researches," vol. ii. ed. *Calcutta*, p. 52.

† "Ueber die Verwandschaft," etc. p. 44.

tors, through carelessness or ignorance, endeavoring to get rid of the difficult and complex inflections of the Sanscrit, for the same reasons that the barbarians altered the Greek and Latin languages, to the formation of the modern Romaic or Italian."*

Perhaps, too, another instance may be found in the Tartar languages, in which a profound scholar finds traces of similar departure from the original type of their grammatical construction. "Depuis l'extrémité de l'Asie," says Abel-Rémusat, "on ignore entièrement l'art de conjuguer les verbes; ou du moins les participes et les gérondifs jouent le principal rôle dans les idiomes Tongous et Mongols: où la distinction de personnes est inconnue. Les Turcs orientaux en offrent les premiers quelques traces; mais le peu d'usage qu'ils en font semble attester la pré-existence d'un système plus simple. Enfin ceux des Turcs qui touchaient autrefois la race Gothique dans les contrées qui séparent, l'Irtich et le Jäik, que l'ont repoussée ensuite, et bientôt poursuivie jusqu'en Europe, ont de plus que les Turcs quelque chose qui leur est commun avec les nations Gothiques; la conjugaison par le moyen des verbes auxiliaires; et malgré cette addition,

* "On the Existence of the Hindu Religion in the Island of Bali."—Asiat. Res. vol. xiii. *Calcutta*, 1820, p. 161. In another work Mr. Crawfurd expresses his opinion in a rather modified form: "The opinion I am inclined to form of this singular language is, that it is no foreign tongue introduced into the island, but the written language of the priesthood." History of the Indian Archipelago, *Edinb.* 1820, vol. ii. p. 18

qui semble étrangère à leur langue, celle-ci conserve quelque chose du mécanisme géné des idiomes sans conjugaison."* Finally, another example may be drawn from the Amharic; and I will state it in the words of an able writer in a new periodical, deserving of every encouragement:—"So much has been stated merely to show that the question needs to be considered thoroughly, whether languages may not borrow each other's pronouns and inflections, while the whole material remains incongruous. . . Indeed, the Amharic language, which at first was supposed a dialect of the Gheez (Abyssinian), and then to be Shemitic, is now alleged by the most recent inquirers to be of African pedigree, and only to have imitated Shemitic inflections."†

These are instances of languages clearly going even out of their own families to find grammatical forms and structure. Languages at the greatest distance display sometimes the most extraordinary coincidence of grammar, yet are not therefore supposed to stand in any affinity. For instance, the Biscayan presents many curious analogies with several American languages—such as the want of precisely the same letters, the tendency to combine the same consonants, and a similar complication of the conjugational system, formed by the insertion of syllables expressing different modifications of

* "Recherches sur les Langues Tartares:" *Paris*, 1820 tom. i. p. 306.

† "On comparative Philology," in the *West of England Journal*, No. 3, July, 1835, p. 94.

the simple verb; and, in the latter point, it resembles also the dialects of South-west Africa.* Yet Humboldt, at the very moment he denies that similar words are sufficient to establish a common origin for different languages, and mentions the points of resemblance I have just stated, is far from concluding that any affinity is to be admitted between these different idioms; but on the contrary, says: "Grammatical peculiarities of this sort have always appeared to me demonstrations rather of degrees in civilization, than of affinity between languages."†

But, to come to some conclusion upon this matter: it appears to me, that while on the one hand, the comparers of words have carried their conclusions a great deal too far, the learned Von Schlegel has also been borne away by his indignation against their excesses, when he tells us, that the common use of *a privativum* proves more for the affinity of Greek and Sanscrit than some hundreds of words.‡ Humboldt, no less a supporter of the superior deference due to grammatical resemblance, in a brief but able exposition of his views upon our study, allows proper weight to verbal affinities.§

* See "Balbi's Tableau des Langues de l'Afrique."

† "Prüfung der Untersuchung über die Urbewohner Hispaniens," p. 175; cf. p. 109.

‡ *Ubi sup.*

§ "An Essay on the best means of ascertaining the affinities of Oriental Languages," by Baron W. Humboldt. In the "Transactions of the Royal Asiatic Society," vol. ii. 1830, pp. 214, 215.

I should therefore propose a rule for examining verbal affinities, and concluding therefrom relationship between languages, which may prevent the arbitrary methods followed by the lexical, and come nearer the severer wishes of the other school. This is, not to take words belonging to one or two languages in different families, and, from their resemblance, which may be accidental or communicated, draw inferences referable to the entire families to which they respectively belong; but to compare together words of simple import and primary necessity, *which run through the entire families*, and consequently are, if I may so express myself, aboriginal therein. For instance, the numeral *six* is in Sanscrit षष् *shash*, in Persian شش *shesh*, in Latin *sex*, in German *sechs*. This is consequently a word strictly belonging to the entire family; yet it belongs as much to the entire Semitic family; for in Hebrew, its purest type, we have no less שֵׁשׁ *shesh*, and in the other dialects this is modified according to the laws that always regulate the change of letters. Again, *seven* is in Sanscrit सप्तन् *saptan*, in old German *sibun;* comparing these with the Semitic languages, we have שבע *shevang* in Hebrew, and شبعت *sheba't* in Arabic. *One* likewise is in Sanscrit ऐक *aika*, in Persian یک *yak*, in Hebrew אחד *echad*, and so in the other dialects. The word κέρας, if found only in Greek, might be supposed a derivative from the Hebrew or Phenician קרן *keren;* but this opin-

ion seems excluded by finding it pervade members of the family which could not have so borrowed it; as the Latin *cornu*, and the German *horn*. Nor can even the Latin be derived from the Greek, for the insertion of the *n*, which brings it nearer to the Semitic, can hardly be accidental; particularly as it is found in the German, which cannot be suspected of communication either with Hebrew or Greek. Yet the word thus found in so many members of this family, is as universal in the Semitic, where the Syriac is ܩܪܢ *karno*, and the Arabic قرن *keren*. In the same manner there seems no reason for doubting the pure Sanscrit origin of the word *ama*, mother; and yet it is essentially Semitic; אם *em* in Hebrew, and أُمّ *omma* in Arabic, which have the same meaning; as well as *ama* in Biscayan, now used in Spanish for a nurse. These examples are sufficient to illustrate my rule. They present cases wherein words pervade all or most of the members of two families; so that we may consider them primary or essential to both. And only in such cases as these would I easily admit a comparison of words, as sufficient to demonstrate affinity between languages. When, therefore, a lexicon such as Parkhurst's, derives an English word from a Hebrew root, I at once reject it as ungrounded: when a Greek one is derived from it, I admit it as possible, because it may have been communicated by intercourse with the Phenicians, but it proves nothing as to derivation. If, as in the foregoing examples, two or more of these languages

have the same primary word, and this again recurs in several of the Semitic languages, I admit it as of weight towards framing the mysterious connection of all languages at some primeval period.

This leads us to another important inquiry: what number of words found to resemble one another in different languages will warrant our concluding these to be of common origin. This point has been made, by the late Dr. Young, the subject of a curious mathematical calculation, which has not, to my knowledge, found its way into any ethnographic work; probably from its occurring in an essay upon subjects nowise connected with this study. After giving his various formulas, he thus concludes: "It appears, therefore, that nothing whatever could be inferred with respect to the relation of two languages from the coincidence of the sense of any single word in both of them; and that the odds would be three to one against the agreement of two words; but if three words appear to be identical, it would be then more than ten to one that they must be derived in both cases from some parent language, or introduced in some other manner; six words would give more than 1,700 chances to one, and eight, near 100,000; so that, in these cases, the evidence would be little short of absolute certainty. In the Biscayan, for example, or the ancient language of Spain, we find in the vocabulary accompanying the elegant essay of Baron W. von Humboldt, the words *beria*, new; *ora*, a dog; *guchi*, little; *oguia*, bread;

otzoa, a wolf (whence the Spanish *onza*); and *zazpi* (or as Lacroze writes it, *shashpi*), seven. Now, in the ancient Egyptian, new is *beri;* a dog, *whor;* little, *kudchi;* bread, *oik;* a wolf, *ounsh;* and seven, *shashf;* and if we consider these words as sufficiently identical to admit of our calculating upon them, the chances will be more than a thousand to one that, at some very remote period, an Egyptian colony established itself in Spain: for none of the languages of the neighboring nations retain any traces of having been the medium through which these words have been conveyed."*

This conclusion is undoubtedly too definite and bold; for these resemblances, if real, may be sufficiently explained by the supposition that both languages had the same original point of departure, and have both preserved in themselves some fragments of a common primary language. Still, to those who pursue this system of comparison, the general results of this mathematical calculation must be exceedingly interesting, inasmuch as it seems to prove that a very limited number of words, if really alike and of such a character as could not have been communicated by later intercourse, are sufficient to establish an affinity between two languages.

Coming, therefore, at last to the consequences of this long disquisition, which was necessary for understanding the respective value of the results

* "Remarks on the Reduction of Experiments on the Pendulum."—Philosophical Trans. vol. cix. for 1819, p. 70.

I am going to lay before you, I need hardly inform you that the followers of the lexical system, or of verbal comparison, more readily find analogies between languages at a great distance one from the other, and possessing no historical connection. Thus the Biscayan, which we have seen by Dr. Young compared with the Egyptian, has been in like manner confronted by Klaproth with the Semitic languages, and a number of words really or apparently similar brought together from the two.* In like manner he addressed a letter to the late M. Champollion, in which he pointed out curious verbal coincidences between the Coptic and very distant languages, particularly such as have their seat between the Oby and the Wolga.† But of his assiduous labor in this department, I shall have to speak again.

The two families which afford the greatest facilities for examining the connection between languages of totally different characters, are doubtless those you have so often heard mentioned—the Indo-European and Semitic; for we are better acquainted with their various members than with those of any other family. Hence it is that most attempts have been made to bring these into contact; but too often, from neglecting the rule I have proposed, of ascertaining the originality of the words so compared, in both the families, by seeing if they

* "Mémoires relatifs à l'Asie:" *Paris*, 1824, tom. i. v. 214

† Republished, *ibid.* p. 205.

pervade all or many of their branches, the result is not always satisfactory. For instance, Dr. Prichard, in a comparative list which he has given,* does not appear to me sufficiently to have attended either to the primary character of the words, or to their being common to the entire family. Thus, he compares the Hebrew word יין—*yain* with the Latin *vinum*, and we might add the Greek οἶνον; and the comparison is probably correct. But, as it is more than probable that the cultivation of the grape, and the manufacture of wine, proceeded from east to west, and belonged in earliest times to Semitic nations, so may we likewise suppose that the name accompanied it; and thus it is a borrowed word. Again he compares the Latin *lingua*—tongue, with the Hebrew לוע—*loang*, to swallow. Not to say that the connection of these two ideas is not a probable one in etymology, the word *lingua* is peculiar to Latin in the Indo-European family. But it becomes a family word, if we observe what Marius Victorinus says—"that the ancients said *dingua* for *lingua*."† The word, thus restored to its primitive form, enters into affinity with the German *zunge*, and loses all resemblance to the Semitic verb.

* At the end of his "Eastern Origin of the Celtic Nations," p. 193.

† "Novensiles sive per *l* sive per *d* scribendum; communionem enim habuerunt literæ hæ apud antiquos, ut dinguam et linguam, et dacrimis et lacrimis."—Marii Victorini Grammatici et Rhetoris de Orthographia. Ap. Pet. Sanctand. *Lugd.* 1584, p. 32. Comp. p. 14.

I have already given a few instances of what I consider more satisfactory verbal comparisons between the two families, when I laid down the rule for such inquiries; but I would further suggest, that there are points in the grammatical characters of the two families which will admit of a minuter comparison than has been hitherto attempted. I should find it difficult to explain my sentiments upon this head without going into a minute and complicated comparative analysis, hardly intelligible without some acquaintance with the languages, and not interesting to a great portion of my audience.* I will therefore only say, that I am convinced a closer grammatical affinity will be found between the families than we are at first inclined to suspect; and it is with pleasure that I mention a work which seems likely to open a field to new researches, and point out new elements of affinity between these and other families. I allude to Dr. Lepsius's "Palæography, as a means of Inquiry into Languages, exemplified in the Sanscrit," published last year, and full of the most curious and original researches. By means of this new element, he has established several very ingenious and striking resemblances between Sanscrit and Hebrew, so as to leave no doubt, according to his own expression, of the existence of a common, though undeveloped germ, in both.†

* I have added a note upon this subject at the end of this volume.

† "Palæographie als Mittel fur die Sprachforschung

Encouraged by his success in this instance, he was advised to apply himself to the study of Coptic, with a view to discover, if possible, its relations with other languages; seeing that hitherto it has been considered an isolated and independent tongue. By the generosity which characterizes the German governments, whenever the interests of literature are concerned, he has been enabled to pursue his researches; and they have been crowned with complete success. Through the kindness of the distinguished and learned individual, at whose suggestion he undertook them, I am enabled to lay before you their interesting results, down to a very late period. The first letter, whereof I have translated the following extracts, is dated Paris, Jan. 20, of the present year (1835), and is addressed to the Chev. Bunsent:

"My Egyptian and Coptic studies are going on well. They have brought me to results, by which I have been myself most agreeably surprised; and whose more universal interest for the history of languages becomes every day more striking. What alarmed me a little at first was the complete linguistic solitude in which the Coptic language appeared to be placed, and the little prospect I

zunächst am Sanscrit nachgewiesen." *Berlin*, 1834, p. 23. A remarkable coincidence between the two, is the way in which ר *Resch*, is evidently considered as a vowel, in the rules regarding the Hebrew points, precisely as in Sanscrit the letter *R*. Not having any longer Lepsius's work at hand, I do not remember whether he dwells upon this resemblance

had of ever being able to use it as a help in my researches into Egyptian antiquities. At the same time I must confess, that the historical demonstrations of Quatremère, on the origin of the Egyptian language (which, indeed, are wholly independent of the language itself), had left in my mind many doubts unsolved as to the identity of the Egyptian and Coptic tongues. I have now discovered, in the essence of the language itself, not only that there is no appearance whatever of any grammatical change, and that it possesses, perhaps, in a higher degree, that principle of stability so peculiar to the Semitic dialects, but also that it has preserved in its formation traces of a higher antiquity than any Indo-Germanic or Semitic language wherewith I am acquainted, which traces will therefore be most unexpectedly important even for these two families. At the same time the Coptic cannot be termed either Semitic or Indo-Germanic; it has its own peculiar formation, though, at the same time, its fundamental relationship with these two families is not to be mistaken. Its degree of cultivation is about the same as that of the Semitic languages, and therefore the relationship is here more manifest. The progress pointed out by you from syllabic to alphabetic-language, is also a most important element for the Coptic.

"The roots of the pronouns are a part of speech which seems to have worked the earliest in the formation of language, and to have influenced it

in a very considerable degree. On these roots, and their comparisons with the Semitic and Indo-Germanic pronominal formations, I lay great stress. Let us, for example, compare for a moment the affixes of the personal pronoun in Coptic and Hebrew, in order to see the relationship between the formation of both.

	my sea	*our sea*	*thy sea*, m.	*thy sea*, f.
Heb.	jam-mi	jam-nu	jam-ka	jam-k (i)
Copt.	jom-i	jom-n	jom-k	jom-ti
	your sea	*his sea*	*her sea*	*their sea*
Heb.	jam-kem (ken)	jam-(o)-hu	jam-hâ (-t)	jam-m-u
Copt.	jom-ten	jom-f	jom-s	jom-u *

"I am at present occupied with the task of laying before the public a specimen of a Coptic grammar, so as to account for the new direction given to my studies. I will, however, premise a comparative part, which will be founded principally upon the pronominal roots, and will secure

* I will take the liberty of adding a few remarks. 1st. The resemblance in the first person singular is complete, because the reduplication of the ם—*m*, in the example chosen, is accidental, in consequence of its being supposed to be derived from the obsolete word ימם—*yamam*; so that the suffix is simply *i*, as in Coptic. 2ndly. The difference in the second person feminine singular is also more apparent than real; inasmuch as the Hebrew in the second persons departs from the suffix suggested by analogy, *ta*, *ti* or *t*, *tem*, *ten*, and assumes a *c* instead of the *t*. The Coptic throws light upon this circumstance, by preserving here the regular suffixes, while in the masculine it accompanies the Hebrew in its change. 3rdly. This remark, it is evident, comprises the second person plural.

to the Coptic language the ground on which it has arisen, and point out its place among the other better-known languages. The new and particular part of its formation, that part which gives to every language its proper individuality, will thus be linked in a more convenient manner, both for the writer and for the reader, with the older part, whereby it is connected with other dialects. Some important parts of my Coptic grammar are in substance finished already, and it is not, after all, so difficult a task to shed a little light upon that which before was in such utter darkness.

"I have been induced to pay particular attention to the names of the numerals, which I found bore a remarkable likeness to the figures which signify their respective numbers. What has struck me still more is, that the Indo-Germanic and Semitic numerals agree exactly, even in details, with the Egyptian system: that, further, the Sanscrit ciphers are essentially Egyptian; and that all this is found much more clearly, and in a greater degree of nearness to its natural origin in the Egyptian. The numeral figures decidedly appear to me to have gone from Egpyt to India, thence they were transported by the Arabs, who even now call them Indian, even as we now term them Arabic, because we received them from the Arabs. The remarkable agreement of the numerals in the Coptic, Semitic, and Indo-Germanic, and the demonstrable derivation of them, principally in Egyptian, from the three pronominal roots, and from their cipher

like connection with one another, will lead me to bestow a more extensive discussion upon this important subject.

"Finally, one of the principal points which have occupied me, is the undeniable connection between the Semitic alphabet and the Demotic, and, consequently, the hieroglyphic alphabets of the Egyptians. What obstructs in great measure all research into the pronunciation of the Coptic, is the Greek character, which was adopted in the second or third century, when many of the nicer distinctions, which no doubt existed in the original domestic palæography, were necessarily abandoned. At the same time, the pronunciation of the Coptic tongue, which at first, owing to its extraordinary accumulation of vowels and other peculiarities, appeared to me quite chaotic, is become quite clear to me; especially since I have made more minute researches into the accents, which in the grammars are considered as quite unessential, and are generally, in published works, given very incorrectly. But I have now by me some manuscripts from the library, which have furnished me with a completely new light upon the subject."

The second extract which I will lay before you is from a letter dated the 14th of last month (February):

". . . . . I have thought it would perhaps be better if I drew up and sent to the Academy my essay on the names and signs of the numerals, to which, as well as to their interesting relations, I

believe I have unquestionably discovered the key in the Egyptian ciphers, and in the Coptic names of the numerals. It will be ready, at latest, in a week; and the results appear to me perfectly clear and satisfactory, inasmuch as they solve the riddle so often, but so remotely, attempted, respecting the meaning of these ancient numeral roots, and that not only as regards the Coptic, but also for the Semitic and Indo-Germanic languages; and they will place this whole cycle of dialects in a very remarkable harmony with one another, which, in my mind, may be of great importance for all the higher departments of comparative linguistic."

The conclusions to be drawn from these interesting documents must be obvious to every mind. We have it ascertained that the ancient Egyptian, now fully identified with the Coptic, is no longer to be considered an insulated language, void of connection with those around it, but presents very extraordinary points of contact with the two great families so often mentioned, not, indeed, sufficiently distinct to make it enter into either class, but yet sufficiently definite and rooted in the essential constitution of the language, to prevent their being considered accidental, or a later engrafting thereupon. The effect of this intermediary character, according to Lepsius's expression, is to group together in a very remarkable harmony this cycle of languages; so that, instead of any longer considering the Indo-European and Semitic as completely insu

lated families, or being compelled to find a few verbal coincidences between them, we may now consider them as linked together, both by points of actual contact, and by the interposition of the Coptic, in a mysterious affinity, grounded on the essential structure, and most necessary forms, of the three.

Now let us consider the further inquiries to which these researches must lead a thinking mind; how, for example, can such intermediary languages have arisen? Is it from both these great groups having been originally one, so that, as they separated, like masses cleft asunder by some natural convulsion, smaller fragments splintered away between and from both, partaking of the peculiar grain and qualities of both, so as to mark their points of former union? Or are the whole to be considered as equally derivatives of a common stock, modified into such varieties by circumstances now unknown, and dependent upon laws now, probably, abolished? Take any hypothesis, or rather anticipate any result you please, likely to result from these discoveries and their further extension, and you come necessarily to a union and community of the great groups or families, partly by themselves, partly, like the polygonar structures of the ancients, through the medium of smaller connecting fragments, which nature or Providence has allowed to remain between them.

And this is further worthy of notice, that the

severer school, the one which seemed to require a demonstration of affinity too rigid to be ever practical out of the limits of one family, has, in fact, discovered that affinity between the families themselves, and left no cavil tenable against this important fact. For, this must close all that can be expected from this study, as far as principles are concerned; all that remains now is to desire their further application, and to have the same processes extended to other groups, apparently separated from the rest.

And here let us look back for a moment at the connection between our study and the sacred records. From the simple historical outline which I have laid before you, it appears that its first rise seemed fitter to inspire alarm than confidence, insomuch as it broke in sunder the great bond anciently supposed to hold them all together; then for a time it went on, still further severing and dismembering; consequently, to all appearance, ever widening the breach between itself and sacred history. In its further progress, it began to discover new affinities where least expected; till, by degrees, many languages began to be grouped and classified in large families acknowledged to have a common origin. Then, new inquiries gradually diminished the number of independent languages, and extended, in consequence, the dominion of the larger masses. At length, when this field seemed almost exhausted, a new class of researches has succeeded, so far as it has

been tried, in proving the extraordinary affinities between these families—affinities existing in the very character and essence of each language, so that none of them could have ever existed without those elements wherein the resemblances consist. Now, as this excludes all idea of one having borrowed them from the other; as they could not have arisen in each by independent processes; and as the radical difference among the languages forbids their being considered dialects or offshoots from one another, we are driven to the conclusion that, on the one hand, these languages must have been originally united in one, whence they drew these common elements essential to them all; and, on the other, that the separation between them, which destroyed other, no less important, elements of resemblance, could not have been caused by any gradual departure, or individual development,—for these we have long since excluded,—but by some violent, unusual, and active force, sufficient alone to reconcile these conflicting appearances, and to account at once for the resemblances and the differences. It would be difficult, methinks, to say what further step the most insatiable or unreasonable skeptic could require, to bring the results of this science into close accordance with the scriptural account.

But to complete the history of this study, I must not omit the writings and opinions of several authors who have not entered into the line of demonstration I have till now followed, although

their names have been occasionally introduced. I will lay before you, therefore, their positive conclusions; thus showing you how far they bear me out in the consequences I have drawn from their researches. I will divide them into two classes, the first whereof shall contain such as agree in acknowledging the original unity of all language.

The learned Alexander von Humboldt, to whom we owe so much valuable information regarding the languages and monuments of America, thus expresses himself upon this interesting point:— "However insulated certain languages may at first appear, however singular their caprices and their idioms, all have an analogy among them, and their numerous relations will be more perceived, in proportion as the philosophical history of nations, and the study of languages, shall be brought to perfection."*

Upon this important subject a most decisive testimony was given by the Academy of St. Petersburg, in the fifth volume of its memoirs.† This learned body was, probably, in this part of its labors, very much under the influence of Count Goulianoff, who was an enthusiast for the unity of languages, as demonstrated simply by similarity of words, without sufficient attention, often, to real identity, much less to the essential construction of the languages. He himself has sufficiently

* Ap. Klaproth, "Asia Polyglotta," p. vi.

† See the "Bulletin Universel," 7e section, vol. i. p. 380.

declared his views in his Discourse on the Fundamental Study of Languages, from which I will extract one passage:—"La succession des faits antérieurs à l'histoire en s'effaçant avec les siècles, semble nuire à l'évidence du fait essentiel, savoir, celui de la fraternité des peuples. Or ce fait, le plus intéressant pour l'homme qui pense, s'établirait implicitement par le rapprochement des langues anciennes et modernes, considérées sous leur aspect originaire. Et si jamais quelque conception philosophique venait multiplier encore les berceaux du genre humain, l'identité des langues serait toujours là, pour détruire le prestige; et cette autorité ramènerait, je pense, l'esprit le plus prévenu."* A year later than this publication, he sent forth a prospectus of a work which was to prove the unity of languages.† I know not whether it appeared, for the character of his researches is not such as to have induced me to inquire after it; but I fear there was too much promised in that prospectus, for the promises to have been kept. The decision of the Academy was however quite unreserved upon this point; for it maintains its conviction, after a long research, that all languages are to be considered as dialects of one now lost.

And in the same class of writers must be

* "Discours sur l'Etude Fondamentale des Langues:" *Paris*, 1822, p. 31.

† The title of the work was to be: "Etude de l'Homme dans la manifestation de ses facultés."

reckoned the late State-councillor Merian, who has adopted the same conclusion, though not perhaps positively stated in his great work the *Tripartitum*. This consists of four folio volumes, published at Vienna between 1820 and 1823, and contains comparative tables principally of German and Russian words, but with an additional mass of incongruous materials from all other languages. For lexical comparison, the work no doubt has considerable value; but it must be owned that page after page has to be turned over, before anything like a tolerable resemblance can be discovered, in languages of different families. Be this as it may, the conclusion of his first Continuation, or second volume, sufficiently declares his sentiments upon the point now under consideration, for he thus writes:— "Those who doubt of the unity of language, after perusing Whiter, may read Goulianoff."*

Of the same school, but far superior in merit to the authors yet mentioned, is Julius Klaproth, whose name I have already more than once introduced. To few authors are we more indebted for curious information regarding the languages and literature of most Asiatic nations, and the geography of countries, else but little known. It must, however, be owned, that he is a bold writer, whose assertions should be received with some degree of caution: it would, indeed, have been difficult

* "Tripart. sect de Analogia Linguarum Libellus, Continuatio:" *Vien.* 1822, p. 585. Whiter's work here alluded to is the "Etymologicum Universale."

cult to unite perfect accuracy with the varied character of his researches. His great work on the affinity of languages, the *Asia Polyglotta*, published at Paris in 1823, consists of a large quarto of text, with a folio of comparative tables. In it he makes no secret of his complete disbelief in the Mosaic history of the dispersion; it is, he tells us, like many other things in the writings of Western Asia, a mere story founded upon the significant name of Babylon.* He supposes mankind to have escaped from the deluge at different points, by climbing the highest mountains; and hence considers the various families of the human race, as propagated afterwards from so many centres—in the Caucasus, the Himalaya, and the Altai mountains. Notwithstanding these inauspicious opinions, his results are in strict accordance with the sacred history. He flatters himself that in his works "the universal affinity of languages is placed in so strong a light, that it must be considered by all as completely demonstrated. "This," he adds, "does not appear explicable on any other hypothesis than that of admitting fragments of a primary language yet to exist, through all the languages of the Old and New Worlds."† And I think it must be

* "Die andere (Sprachverwandschaft) ist *postdiluvianisch*, und ihre Ursachen sind nicht so verborgen. so dass wir nicht nöthig haben den Thurm von Babel zu Hülfe zu nehmen, das, wie manches in den Schriften der Westasiaten, nur eine Erzählung zu seyn scheint, die zu einem Bedeutung habenden Namen erfunden ist."—S. 40, comp. S. 41.

† "Die allgemeine Sprachverwandschaft, mit der ich mich

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owned that in the numerous comparative lists given after his account of each language, though many examples may be slight and fanciful, abundance of resemblances may be discovered, sufficiently marked to justify the successful application of Dr. Young's calculus, if his theorem is to be allowed any value.

With greater pleasure still, I proceed to record the sentiments of the lamented Frederick Schlegel, a man to whom our age owes more than our children's children can repay—new and purer feelings upon art and its holiest applications; the attempt, at least, to turn philosophy's eye inward upon the soul, and to compound the most sacred elements of its spiritual powers with the ingredients of human knowledge; above all, the successful discovery of a richer India than Vasco de Gama opened unto Europe, whose value is not in its spices, and its pearls, and its barbaric gold, but in tracts of science unexplored, in mines long unwrought of native wisdom, in treasures deeply buried of symbolic learning, and in monuments long hidden of primeval and venerable traditions.

In the work which first turned the eyes of Europe to these important subjects (his little treatise

bei der Ausarbbitung dieses Werkes weit mehr beschäftigt habe, als es anfänglich mein Vorsatz war, ist durch dasselbe in ein so helles Licht gebracht worden, dass man sie als erwiesen anzunehmen gezwungen ist. Sie scheint nicht anders erklärbar als durch die Ueberbleibsel einer Ursprache, die sich in allen Mundarten der alten und neuen Welt Wieder finden."—Vorrede, S. ix.

published in 1808, upon the language and wisdom of the Indians), he clearly lays down his opinion touching the original unity of all language. He rejects with indignation the idea that language was the invention of man in a savage and untutored state, brought to gradual perfection by the toil or experience of successive generations. He considers it, on the contrary, as a whole, with its roots and structure, its pronunciation and written character,* which was not hieroglyphic, but consisted of signs exactly expressive of the sounds that composed that early speech. He speaks not, indeed, of language as given to man by superior communication; but he considers the mind of man so to have been organized as necessarily to produce, on his first appearance, this well-ordered and beauti-

* The idea of writing having been a primeval art, and an essential part of language, taken in its completest sense, is not by any means confined to Schlegel. Not to mention the attempt of Count de Gebelin to prove the unity of all alphabets ("Monde Primitif," end of vol. iii.), or the still more learned and ingenious comparisons given by Paravey ("Essai sur l'Origine unique et hiéroglyphique des chiffres et des lettres de tous les peuples," *Paris*, 1826), I will only mention two authors who agree in this opinion. Herder observes: "Les alphabets des peuples présentent une analogie encore plus frappante: elle est telle, qu'à bien approfondir les choses, il n'y a proprement qu'un alphabet."—Nouveaux Mémoires de l'Académie Royale, an 1781: *Berlin*, 1783, p. 413. Baron W. Humboldt seems to admit the same opinion, at the conclusion of his essay, "Ueber das Entstehen der grammatischen Formen." *Berlin*, 1823.

ful structure, and thereby supposes its oneness and indivisibility.*

Nor did he alter his opinion by further study; on the contrary, in his last beautiful work, his *cycnea vox et oratio*, which, as has been beautifully observed, closed his philosophical speculations with an expression of doubt,†—for death found him watching by his night-lamp over the best interests of virtue, and, like the slayer of Archimedes, refused him time to work out his problem; in his *Philosophy of Speech* he considers language as an individual gift to man, and, consequently, in its origin only one. I cannot forbear making one quotation:

"With our present senses and organs, it is as impossible for us to form the remotest idea of that speech which the first man possessed before he lost his original power, perfection, and worth, as it would be to reason of that mysterious discourse whereby immortal spirits send their thoughts

* "Sprache und Weisheit der Indier," 1tes Buch, 5tes Kap. S. 64. comp. S. 60. These sentiments, expressed with the fervid eloquence which distinguishes all the philosophical speculations of their author, have been severely commented on by F. Wüllner, in his interesting work, "Ueber Ursprung und Urbedeutung der sprachlichen Formen:" *Münster*, 1831 p. 27. This author deduces all language from interjectional forms (p. 4).

† Philosophische Vorlesungen insbesondere über Philosophie der Sprache und des Wortes." *Wien.* 1830. The author expired while writing the tenth lecture; the last word of his manuscript was *aber*, but.

across the wide space of heaven upon wings of light; or of those words, by created beings unutterable, which in the unsearchable interior of the Deity are spoken, where as is in holy song expressed, depth called upon depth, that is, the fulness of endless love upon eternal majesty. When, from this unattainable height we descend again into ourselves, and to the first man, such as really he was, the simple unaffected narrative of that book which contains our earliest records, that God taught man to speak, even if we go no further than this simple unaffected sense, will be in accordance with our natural feelings. For how could it be otherwise, or how could any other impression be made, when we consider the relation which God therein holds —of a parent, as it were, teaching her child the first rudiments of speech. But under this simple sense there lieth, as does through all that book of twofold import, another, and a far deeper signification. The name of any thing or living being, even as it is called in God, and designated from eternity, holds in itself the essential idea of its innermost being, the key of its existence, the deciding power of its being or not being; and so it is used in sacred speech where it is, moreover, in a holier and higher sense, united to the idea of the Word. According to this deeper sense and understanding, it is in that narration shown and signified, according as I have before briefly remarked, that together with speech, intrusted, communicated, and delivered, immediately by God to man, and through it, he was in

stalled as the ruler and the king of nature, yea, more rightly, as the deputed of God over this earthly creation, unto which office was his original destination."*

Such, then, is our first conclusion drawn from the writings of modern ethnographers, that the language of men was originally one; come we, therefore, to the second, which will much confirm it. How was this one language separated into so many strangely different?

I will first give you the authority of Herder, and, that he may not be suspected as a partial witness, I will premise that, in the very page I am about to quote, he is careful to inform us that he considers the history of Babel as a "poetical fragment in the oriental style." First, then, he tells us, that "as the human race is a progressive whole, the parts whereof are intimately connected, so must language form, also, a united whole, dependent upon a common origin. . . . Having laid this down," he continues, "there is a great probability that the human race, and languages therewith, go back to one common stock, to a first man, and not to several dispersed in different parts of the world." This position he then proceeds to illustrate, by an inquiry into the grammatical structure of languages. His conclusions, however, do not stop here: he confidently asserts, that, from the examination of lan-

* P. 70. Perhaps this idea is borrowed from Herder "Philosophy of History," *London*, 1800, p. 89, though there only the capacity of speech, and not language, is mentioned.

guages, the separation among mankind is shown to have been violent; not indeed that they voluntarily changed their language, but that they were rudely and suddenly (*brusquement*) divided from one another.*

To demonstrate the same conclusion, was the object of a series of papers read in 1824 and 1825 to the Royal Society of Literature, by Mr. Sharon Turner. The learned author went into a minute analysis of the primary elements of speech, and concluded that the numerous evidences of attraction and repulsion between languages left no alternative in explaining them, save the adoption of some hypothesis similar to the event recorded in Genesis. But I will not insist further on his testimony—the only one I have referred to, in this science, of an author expressly defending the Scripture narrative.†

More than once I have had occasion to quote the opinions of the learned Abel-Rémusat, a man who may justly be considered the reviver and

* *Upi sup.* "Memoires of the Royal Acad." *Ber.* pp. 411–413.

† These papers are printed in the "Transactions of the Royal Society of Literature," vol. i. part 1: *London*, 1827, pp. 17–106. There are many inaccuracies in the examples given in these elaborate papers; and a system of philological principles is employed, which will not stand the tests universally admitted by continental linguists. No notice whatsoever is taken of the acknowledged division of families; the same word spelt differently, perhaps by writers of different countries, is repeated again and again, and some given which do not exist in the languages quoted.

great facilitator of Chinese literature, and who possessed at once a profound knowledge of the languages of Eastern Asia and a reflective philosophic mind. To me his memory must ever be joined in close association with the interest I feel in this science; for when young, I had the pleasure of hearing his instructive conversation thereon with others learned as himself, but, like him, now no more.

E quale il cicognin che leva l' ala
Per voglia di volar, e non s' attenta
D' abbandonar lo nido, e giù la cala;
Tal era io con voglia accesa e spenta
Di dimandar, venendo infino all' atto
Che fa colui ch' a dicer s' argomenta.*

His work on the Tartar languages, though unfinished, is a mine of rare information upon many points besides its immediate subject; and is distinguished throughout by that power of simplification and analytical resolution, which seems to have been one of his peculiar faculties. In the long and diversified preliminary discourse, we have his sentiments clearly stated, touching the accordance of philological ethnography with the sacred narrative. For, after having expatiated on

* DANTE, "*Purgat,*" XXV.

Even as the young stork lifteth up his wing
Through wish to fly, yet ventures not to quit
The nest, and drops it; so in me desire
Of questioning my guide arose, and fell,
Arriving even to the act that marks
A man prepared for speech.—CARY'S *Translation.*

the manner in which linguistic pursuits may be brought to bear upon history, he thus concludes: "It is then we should be able to pronounce with precision what, according to the language of a people, was its origin, what the nations with which it has stood in relation, what the character of that relation was, to what stock it belongs; at least, until that epoch when profane histories cease, and where we should find among languages that confusion which gave rise to them all, and which such vain attempts have been made to explain."*

But in fact, if once we admit the original unity of language, we can hardly account for its subsequent divisions without some such phenomenon. This has been observed by the sagacious and learned historian Niebuhr, in one of those occasional excursions which we meet in his work, always indicative of the marvellous diversity of his pursuits, among which our science was particularly one. And I quote the following passage the more willingly because in the first edition (I believe the best known in England, through the able translation made of it shortly after its appearance) a very different sentiment occupies its place. "This fallacy," he writes in his third edition, "escaped detection among the ancients, probably because they admitted several primitive races of mankind. They who deny these, and go back to a single pair, must, to account for the existence of idioms different in

* "Recherches sur les Langues Tartares," vol. i. p. xxix.

structure, suppose a miracle; and for those languages which differ in roots and essential qualities, adhere to that of the confusion of tongues. The admission of such a miracle offends not reason; since, as the remains of the ancient world clearly show, that before the present, another order of life existed, so it is certainly credible that this lasted entire after its commencement and underwent at some period an essential change."* And to this remark we may add, that if to account for different languages we must have recourse to so many independent races, we shall be driven to the necessity of admitting, not a few in distant quarters of the globe, but as many as there are idioms at present to all appearance unconnected—that is, many hundreds; a consequence unphilosophical in its principle, for it goes at once to the extremest solution of a constant phenomenon, and still more unphilosophical in its application, for we must multiply the races almost in the inverse ratio of the numbers that compose them; for the smallest tribes and the most subdivided savage populations exhibit, in the most marked manner, remarkable differences of language. Hence the interior of Africa, or the unexplored tracts of Australia, may contain more races than the entire of Europe and Asia. But on this subject more will shortly have to be said.

I will conclude the testimonies of ethnographers

* Niebuhr's Römische Geschichte, 3 Ausg. ler Th. S. 60. Compare the English translation, 1828, p. 44. It is pleasing to see these changes, in spite of the author's declaration, p. xii.

by that of Balbi, the diligent and learned author of the "Atlas Ethnographique du Globe." This work consists of charts classifying languages according to ethnographic *kingdoms*, as he calls them; which are followed by comparative tables of elementary words in every known language. The accompanying volume of introduction contains a vast collection of valuable and interesting information on the general principles of the science. In compiling this work, Balbi not only had access to every class of information actually before the public, but received most important assistance from the ablest ethnographers in Paris. It must be therefore interesting to know what has been the impression produced upon the mind of one who has thus gone over the entire field of ethnographic science, and has heard the opinion of those who have devoted their lives to its cultivation. From my personal intercourse with him, I can say that he is far from thinking that the researches of linguists have in the leastwise tended to impeach the veracity of the sacred historian. Nor is this opinion unrecorded in his work; for in his first chart he thus expresses it: "The books of Moses, no monument, either historical or astronomical, has yet been able to prove false; but with them, on the contrary, agree, in the most remarkable manner, the results obtained by the most learned philologers, and the profoundest geometricians."*

* "Atlas Ethnographique du Globe," par Adrien Balbi *Paris*, 1826. Mappemonde Ethnog. i.

Such then appears to be the two-fold result of this study, once perhaps a dangerous pursuit, now lending a valuable and ever-growing evidence to the narrative of Scripture. Languages gradually forming themselves into groups, and those groups daily tending to approximate and claim mutual relationship, assuredly afford the best proof of a former point of departure, and serve to divide the human race into certain great characteristic families, whose further subdivision enters into the province of history. Like those grouped but disunited masses which geologists consider as the ruins of former mountains, we see in the various dialects of the globe the wrecks of a vast monument belonging to the ancient world.* The nice exactness of their tallies in many parts, the veins of similar appearance which may be traced from one to the other, show that they have been once connected so as to form a whole; while the boldness and roughness of outline at the points of separation prove that it is no gradual devolution, no silent action which hath divided, but some violent convulsion which hath riven them in sunder. And even such positive conclusions you have seen drawn by the most learned ethnographers.

There is still one branch of our science which seems without the pale of all that has been hitherto expounded; and it would be unjust to pass it

* See D'Aubuisson, "Traité de Géognosie: *Stras.* 1827, tom. i. p. 227.

over in silence. All the history of this study, so far as I have given it, appears to apply almost exclusively to the Old World, where civilization must have done much towards assimilating forms and amalgamating dialects; whereas in the interior of Africa, and still more strikingly in the western hemisphere, the theory of language seems to refuse submission to the principles we have established, and the endless variety of tongues involves in painful mystery the origin of the population.

The number of dialects spoken by the natives of America is indeed almost incredible. Choose any tract of the Old World where you think most languages spoken, then select an equal space at random in any district of America peopled by native tribes, and the latter will assuredly give a greater number of various tongues.* I have been myself a witness to such anxiety on this subject in persons of great learning and good understanding that they refused credit to Humboldt's assertions regarding the number of American languages, rather than admit what they deemed an almost insuperable objection to the Scripture narrative. For we cannot suppose each of these tribes, speaking a language totally unintelligible to its neighbors, to be lineally descended from one formed at the dispersion, without allowing the strange anomaly, that, of the human families then formed, such countless, yet such insignificant tribes should

* See Humboldt's "Essai Politique sur la Nouvelle Espagne." *Par.* 1825, tome ii. p. 352.

have wandered to that distance. No wonder, therefore, that the unbelievers of the last century should have taken a shorter method to solve this problem, by asserting that America had its own population independent of that in the older continent.* Here too the friends of religion came early forward, and as too often has happened, with crude hypotheses and groundless theories as to the source of the American population and the means whereby it was transported into that country. Campomanes patronized the Carthaginians, Kircher and Huet the Egyptians, De Guignes the Huns, Sir William Jones the Indians, and many American antiquaries the ten tribes of Israel.

We have now only to examine what light ethnography has been able to throw upon this question, and how far the solutions it presents accord with the gratifying results obtained in other quarters of the globe. The first step towards establishing a connection between the inhabitants of the two continents was attempted by the followers of what we have named the lexical school, and consisted of the comparison of words in American dialects with terms found among the nations of northern and eastern Asia. Smith-Barton was the first who made any progress in this attempt, and his labors were incorporated in a very extended form in an essay by Vater, first published in 1810, and after-

* See Ballet's "Réponses Critiques." *Besançon*, 1819, vol. ii. p. 51.

wards republished in his *Mithridates.** The results of their labors I will give in the words of a competent judge: "Investigations made with the most scrupulous exactness, in following a method till then not used in the study of etymologies, have proved the existence of a few words common to the vocabularies of the two continents. In eighty-three American languages examined by Messrs. Barton and Vater, one hundred and seventy words have been found, the roots of which appear to be the same; and it is easy to perceive that this analogy is not accidental, since it does not rest merely upon imitative harmony, or on that conformity of organs which produces almost a perfect identity in the first sounds articulated by children. Of these one hundred and seventy words which have this connection, three-fifths resemble the Mantchou, the Tongouse, the Mongul, and the Samoyed; and two-fifths the Celtic and Tchoud, the Biscayan, the Coptic, and the Congo languages. These words have been found by comparing the whole of the American languages with the whole of those of the Old World; for hitherto we are acquainted with no American idiom which seems to have an exclusive correspondence with any of the Asiatic, African, or European tongues."†

* "Untersuchung über Amerikas Bevölkerung aus dem alten Continente." *Leipz.* 1810. "Mithrid." 3 Th. 2 Abth. p. 340.

† Alex. von Humboldt, "Views of the Cordilleras," Eng. trans. vol. i. p. 19.

Malte-Brun endeavored to advance a step further, and to establish what he calls a geographical connection between the American and Asiatic languages. After a minute investigation, his conclusions are these—that tribes connected with the Finnish, Ostiack, Permian, and Caucasian families, passing along the borders of the Frozen Ocean, and crossing over Behring's Straits, spread themselves in very different directions towards Greenland and Chili: that others, allied to the Japanese, Chinese, and Kourilians, proceeding along the coast, penetrated to Mexico;* and that another colony, related to the Tungooses, Mantcheous, and Mongols, passed along the mountain tracts of both continents, and reached the same destination. Besides these, he supposes several smaller emigrations to have borne over a certain number of Malay, Javanese, and African words.† However limited the comparison thus made may appear, it has been admitted, as you have seen, by the sagacious traveller I have quoted, and also by Balbi, as sufficient to prove a resemblance between the languages of the two continents, too marked to be the result of accident.

* Humboldt thinks the Tolteks, or Azteks, who colonized Mexico, were the Hiongnoos, who are said in the Chinese annals to have emigrated under Puno; and to have been lost in the north of Siberia.—"Essai Polit." p. 350. See also Paravey, "Mémoire sur l'origine Japonaise, Arabe, et Basque des peuples du plateau de Bogota." *Par.* 1835.

† Tableau de l'enchaînement géographique des langues Américaines et Asiatiques, "Géographie Univ." *Par.* 1831, tome v. pp. 227, *seqq.* comp. p. 211.

Still I will own that I consider these results as but little worth; both because the resemblances are very slight, and too anomalous to be of much service, and because the very authors who give them consider these migrations as simple additions to a population already existing, and merely as modifying agents in the formation or alteration of the indigenous languages.* They have, therefore, if satisfactory, only this value—that they authorize us to conjecture that the original population reached the western hemisphere by the same road which subsequent emigrations held. Hence I am not surprised that a similar attempt, made still later by Siebold, to connect, through their respective vocabularies, the Japanese and the Moscas, or Muyscas, a large American nation between Macaraïbo and Rio de la Hacha, should have been pronounced unsuccessful by the committee appointed in 1829 to examine it on behalf of the Paris Asiatic Society.†

But there are conclusions drawn by ethnographic science, from the observation both of local and general phenomena, which bear most materially upon this point, and have completely removed all the difficulties arising from the multiplicity of American languages. And first, the examination of the structure pervading all the American languages has left no room to doubt that they all form one individual family, closely

* Vater, p. 338. Malte-Brun, p. 212.

† Mémoire relatif à l' origine des Japonais, "Nouveau Journal Asiatique," Juin, 1829, p. 400.

knitted together in all its parts by the most essential of all ties—grammatical analogy. This analogy is not of a vague indefinite kind, but complex in the extreme, and affecting the most necessary and elementary parts of grammar; for it consists chiefly in the peculiar methods of modifying conjugationally the meanings and relations of verbs, by the insertion of syllables; and this form led the late W. von Humboldt to give the American languages a family name, as forming their conjugation by what he termed *agglutination*. Nor is this analogy partial, but it extends over both great divisions of the New World, and gives a family air to languages spoken, under the torrid and arctic zones, by the wildest and by the more civilized tribes. "This wonderful uniformity," says one writer, "in the peculiar manner of forming the conjugations of verbs from one extremity of America to the other, favors in a singular manner the supposition of a primitive people, which formed the common stock of the American indigenous nations." * Another remarks, that the most natural conclusion to which we can come, upon seeing such an extraordinary affinity between languages so many hundreds of miles asunder, is, "that there is a divergence from one common centre of civilization in all." †

Secondly, the more attention is paid to the study of the American languages, the more they

* Malte-Brun, p. 217, comp. p. 213. † Vater, p. 329.

are found subject to the laws of other families, inasmuch as this one great family tends every day to subdivide itself into large groups, having closer affinities with themselves than with the great division of which, in their turn, they form a part. Thus, it had been early observed by the missionaries that certain languages were considered keys to other dialects, so that whoever possessed them, easily made themselves masters of the others. This remark is, I remember, somewhere made by Hervas, and subsequent researches have amply confirmed it. Hence Balbi, in his *Tableau* of the American languages, has been able to divide them into certain great provinces, holding within them numerous dependencies.

Thus, therefore, is the objection to the unity of the American nations, drawn from the multiplicity of their languages, satisfactorily removed, by the very study within which it had arisen, and with it the difficulty of their belonging to a common stock with the inhabitants of the older world. But the collection and comparison of facts connected with linguistic researches, have led to a further, and equally satisfactory, result; for you will see that we yet have to account for the dissimilarity of dialects spoken by nations and tribes bordering on each other, and composed of trifling numbers. Now, it has been observed, that this is a phenomenon noways peculiar to America, but common to all uncivilized countries. Had we no other criterion of unity of origin but language, we

should perhaps be under difficulties in examining this point. But another science, whereof we shall treat next time, and which will greatly confirm the conclusions I am drawing, is able to fix characteristics, whereby the connections of tribes in unity of race may be easily determined. And yet it is found, that in instances, where no doubt can exist of savage hordes having been originally united, there has sprung among them so endless and so complete a variety of dialect, that little or no affinity can be therein discovered. And hence we have, as it were, a rule, that the savage state, by insulating families and tribes, and raising the arm of each one ever against its neighbors, has essentially the contrary influence to the aggregating, unifying tendencies of social civilization; and necessarily introduces a jealous diversity, and unintelligible idioms, into the jargons which hedge round the independence of different hordes.

Nowhere has this disuniting power been more attentively examined than among the tribes of Polynesia. "The Papuans, or Oriental negroes," says Dr. Leyden, "seem to be all divided into very small states, or rather societies, very little connected with each other. Hence their language is broken into a multitude of dialects, which, in process of time, by separation, accident, or oral corruption, have nearly lost all resemblance." * 'Languages," says Mr. Crawfurd, "follow the

* "Asiatic Researches," vol. x. p. 162.

same progress. In the savage state they are great in number, in improved society few. The state of languages on the American continent affords a convincing illustration of this fact; and it is not less satisfactorily explained in that of the Indian islands. The negro races who inhabit the mountains of the Malaya peninsula, in the lowest and most abject state of social existence, though numerically few, are divided into a great many distinct tribes, speaking as many different languages. Among the rude and scattered population of the island of Timor, it is believed that not less than forty languages are spoken. On Ende and Flores we have also a multiplicity of languages; and among the cannibal population of Borneo, it is not improbable that many hundreds are spoken." * The same facts may be observed in relation to the tribes of Australia, who belong to the same race, by examining the list of words peculiar to different tribes, which Captain King has given us.† The greatest dissimilarity exists among them, some, however, as the equivalents for *eye*, pervade them all, and occasionally, as in the terms for *hair*, tribes immediately in contact differ essentially, and yet are found respectively to agree with other islands far removed. Now, if these causes so act elsewhere, they must be far more powerful in

* "History of the Indian Archipelago," vol. ii. p. 79.

† "Narrative of a survey of the Intertropical and Western Coasts of Australia." *London*, 1826, vol. ii. Append.

America; for there, as Humboldt has well observed, "the configuration of the soil, the strength of vegetation, the apprehensions of the mountaineers, under the tropics, of exposing themselves to the burning heat of the plains, are obstacles to communication, and contribute to the amazing variety of American dialects. This variety, it is observed, is more restrained in the savannas and forests of the north, which are easily traversed by the hunter, on the banks of great rivers, along the coast of the ocean, and in every country where the Incas had established their theocracy by force of arms." *

Thus, then, I think, that in this department of its researches, ethnography will be found to have done its duty, by first reducing the immense number of American dialects into one family, and then accounting, by analogy, for their extraordinary multiplicity. But, as the course of lectures I have sketched out will not bring us again into this interesting quarter of the globe, I will draw a little further on your kind indulgence, while I touch upon a few evidences of the connection between the inhabitants of the two worlds, so to supply the defects of our ethnographic acquaintance with their idioms.

First, we have the traditions of the Americans themselves, which describe them as a migratory people, proceeding southward from the northwest.

* "Views of the Cordilleras," vol. i. p. 17.

The Tolteks, then the seven tribes as they are called, the Chechenecks, and the Azteks, are all represented in Mexican history, as successive nations arriving in Anahuac or Mexico. In the hieroglyphic picture exhibiting the migrations of this last people, they are represented, according to Borturini, as crossing the sea, probably the Gulf of California, a circumstance which can leave no doubt respecting the course they held. These traditions further record the arrival of later settlers, who greatly advanced the civilization of those countries. Manco Capac is the most celebrated among them, as being the founder of the dynasty and religion of the Incas. A fanciful writer has seized upon this circumstance, and built upon it a complete history of a conquest of Peru and Mexico by the Monguls.* He supposes Mungo Capac to have been the son of Kublai, the Mongul emperor, grandson of Gerghis Khan, who was sent by his father with a great fleet against Japan. A storm dispersed the fleet, so that it returned not home any more, and this author imagines it to have been driven on the coast of America, where the commander made himself a chief. Ingenious as this may be, and even prob-

* Ranking's "Historical Researches on the Conquest of Peru and Mexico, etc., in the 13th century, by the Mongols, accompanied with elephants." *Lond.* 1827. The spirit of system occasionally betrays the ingenious author into a mistake. Thus, p. 419, he refers to Humboldt as an authority for a Tartar inscription said to have been found in Narragansett Bay; whereas Humboldt, in the very place, rejects the story as more than doubtful.

able, the evidence brought to establish it appears very unsatisfactory. Many analogies may doubtless be found between the Peruvians and Monguls, but they may easily be explained from other sources. However, chronological data, the nature of the religion they established, and the monuments they erected, leave no room to doubt, that Thibit or Tartary was the original country of Mungo Capac's emigration.

Secondly, the computation of time among the Americans affords too marked a coincidence, in matters of mere caprice, with that of eastern Asia, to be purely accidental. The division of time into greater cycles of years, again subdivided into smaller portions, each whereof bears a certain name, is with trifling difference, the plan followed among the Chinese, Japanese, Kalmucks, Monguls, and Mantcheous, as well as among the Tolteks, Azteks, and other American nations; and the character of their respective methods is precisely the same, particularly if those of the Mexicans and Japanese be compared. But a comparison of the zodiac, as existing among the Thibetans, Monguls, and Japanese, with the names given by this American nation to the days of the month, will, I think, satisfy the most incredulous. The identical signs are, the tiger, hare, serpent, ape, dog, and bird, in all which it is plain there is no natural aptitude that could have suggested their adoption in both continents. This strange coincidence is still further enhanced by the curious fact, that several of the Mexican signs,

wanting in the Tartar zodiac, are found in the Hindoo Shastras, exactly in corresponding positions. These are no less arbitary than the former; being a house, a cane, a knife, and three foot-prints. But to do justice to this subject, it would be necessary to enter into much minuter details.*

Lastly, were everything else wanting, the clear traditions so vividly preserved among the Americans of man's early history, of the flood, and the dispersion, so exactly conformable to those of the Old World, must remove every hesitation regarding their origin. The Azteks, Mitteks, Flascalteks, and other nations, had innumerable paintings of these latter events. Tezpi or Coxcox, as the American Noah is called, is seen floating in an ark upon the waters, and with him his wife, children, many animals, and several species of grain. When the waters withdrew, Tezpi sent out a vulture, which, being able to feed on the carcasses of the drowned, returned no more. After the experiment had failed with several others, the humming-bird at length came back, bearing a green branch in its little beak. In the same hieroglyphic painting, the dispersion of mankind is thus represented. The first men after the deluge were dumb; and a dove is seen perched upon a tree, giving to each a tongue; the consequence whereof is, that the families, fifteen in number,

* See the comparative plates, etc., in the 2nd vol. of the "Views of the Cordilleras."

dispersed in different directions.* This coincidence, which reminds me that I am still indulging in digression, would alone be sufficient to establish a link of close connection between the nations of the two continents. But, in fact, so numerous, so extraordinary, and so minute, are the resemblances between them, that in a publication of which I must say a few words, two long and elaborate dissertations have been inserted, to prove that Jews first, and then Christians, colonized America.†

The work to which I allude, is the truly royal collection of Mexican monuments, published by Lord Kingsborough, a treasure of materials for such as dedicate themselves to their study. It seems impossible to look through these splendid volumes without being struck with the varied character of art therein exhibited. The hieroglyphic figures representing the human form in squat and distorted proportions, have nothing in common with the sculptured reliefs. Here we have tall figures standing in warlike attitudes; there females sitting cross-legged upon double-headed monsters, with children in their arms, their necks surrounded by strings of pearls, their heads crowned with conical and fretted head-dresses, sometimes formed of animals; in another

* Humboldt, *ib.* pp. 65, 66.

† The Antiquities of Mexico, published by A. Aglio, vol. vi. pp. 232–409, and 409–420.

place we meet the tortoise, the sacred emblem of India; in another we see the serpent winding round the tree, or men threatened to be swallowed by misshapen monsters; so that we imagine ourselves to be examining the sculptures of some Indian cavern, or ancient pagoda.* And I would add, that the type of countenance in these sculptures is no way American, but strongly recalls to mind the early Indian manner. Then we have another class of monuments, equally distinct, and seeming to harmonize with Egyptian art. We have pyramids constructed upon the same model and apparently for the same purposes; we have figures closely wrapped up, so that only the feet below, and the hands at either side, appear, as in Egyptian statues; while the head-dress surrounds the head and drops down at each side, pushing forward enormous ears: besides other kneeling figures, where this attire is still more marked; so that, as Enea Quirino Visconti observed, they might have been copied from the portico at Dendara, whose capitals they exactly resemble. In figures, too, of this class, the physiognomy is by no means the same as in the former, but of a character more suiting the style of art.†

Who shall solve this riddle for us, and say whether these resemblances are accidental, or pro-

* See vol. iv. part i. fig. 20, 36; 27, 28, 32: Specimens of Mexican sculpture, in possession of M. Latour Allard, at Paris, fig. 15, part iii. fig. 8.

† See *ib.* p. i. fig. 1, *seqq.* 48. Latour's mon. fig, 8, 14, etc.

duced by some actual communication? Assured ly this is yet a land of mystery and clouds, and much study is yet requisite to clear up anomalies, to reconcile contradictions, and place our knowledge upon a stabler footing. We cannot even remove difficulties of this nature nearer our own time; we cannot, for instance, explain how, as Muratori has proved, Brazil wood should be entered among the taxable commodities at the gates of Modena, in 1306; or how Andrea Bianco's map, preserved in St. Mark's Library at Venice, and constructed in 1436, should place an island in the Atlantic, with the very name *Brasile*. How much more must we be involved in difficulties, when we attempt to unravel the intricacies of primeval records, or reconstruct an early history from a few fragmentary monuments?

And in conclusion, I would remark, that many other problems there are, in the history of languages, which enter into the mysteries of nature, and have their solution involved in those hidden laws of her constitution that form her links with the moral ordinance of the world. For, it might be asked, how is it that languages so easily sprung up in early ages, which till now have remained unchanged; or rather, how were their first families so soon divided into dialects, essentially fixed and independent, while in the progress of time mankind have formed little more than dialects of these provincial idioms or manifest derivations, hardly any further prolific? For, within a very

short period after the dispersion, must the Sanscrit, the Greek, and the Latin, or, at least, its parent-tongue, have separated from one another, and received their marked characteristic forms: and in the Semitic family the separation must have been equally early. Now, as well might we ask, why the oak, only near its roots, sends forth huge gigantic branches, each whereof shall of itself seem large enough to form another tree, and have its own dominion of boughs, and its own crown of yearly shoots, while later it can only put forth a punier and less vigorous offspring, wherein the generating virtue seems almost exhausted. And truly there is a sap in nations as well as in trees, a vigorous inward power, ever tending upwards, drawing its freshest energies from the simplest institutions, and the purest virtues, and the healthiest moral action. While these form the soil wherein a people is, as it were, deeply rooted, its powers are almost boundless; and as these alter and become exhausted, it likewise will be weakened, and decay. Assuredly, there was a vigor in the human mind, as compared with ours, gigantic, when the Homeric songs were the poetry of the wandering minstrel, when shepherd-chiefs, like Abraham, could travel from nation to nation, and even associate with their kings, and when an infant people could imagine and execute monuments like the Egyptian pyramids.

And if of nations we so may speak, what shall we say of the entire human race, when all its ener

gies were, in a manner, pent up in its early and few progenitors: when the children of Noah, removed but a few generations from the recollections and lessons of Eden, and possessing the accumulated wisdom of long-lived patriarchs, were marvellously fitted to receive those strange and novel impressions which a world, just burst forth in all its newness, was calculated to make; yea, when they themselves, an infant race, struggling on one side against the ravages of the late disaster, and on another against the luxuriancy of its renovating influence, must have felt within themselves a boundless energy in thought and action, a quickness of apprehension, a richness of contrivance, and a might in execution equal to the crisis, and such as later generations could never want? And from minds thus subject to such peculiar impressions, alive to such unmodified feelings, and so strongly compelled to note their action, the first coinage of language must have received an impress and an image bolder and more indelible than after-times could have communicated, when the early springs of vigorous action had been impaired, or had ceased to act.

But we are not, I think, to imagine that Divine Providence, in distributing to different human families this holy gift of speech, had no further purpose than the material dispersion of the human race, or the bestowing on them varied forms of utterance: there was doubtless therein a deeper and more important end—the sharing out among them of the intellectual powers. For language is so manifestly

the embodying power, the incarnation, so to speak of thought, that we can almost as easily imagine to ourselves a soul without a body, as our thoughts unclothed by the forms of their outward expression. And hence these organs of the spirit's conceptions must, in their turn, mould, control, and modify its peculiar character, so that the mind of a nation must necessarily correspond to the language it possesses.

The Semitic family, destitute of particles and grammatical forms suited to express the relations of things, stiffened by an unyielding construction, and confined by the dependence of words upon verbal roots, to ideas of outward action, could not lead the mind to abstract or abstruse ideas; and hence its dialects have been ever adapted for the simplest historical narratives, and for the most exquisite poetry, where mere impressions or sensations are felt and described in the most rapid succession; while not a school of native philosophy has arisen within their pale, not an element of metaphysical thought occurs in their sublimest compositions. Hence are the deepest revelations of religion, the awfulest denunciations of prophecy, the wisest lessons of virtue, clothed, in Hebrew, under imagery drawn from outward nature. And in this respect, the author of the Koran necessarily followed the same course.

But to the Indo-European was given a wonderful suppleness in expressing the inward and outward relations of things, by flexion in its nouns, by con-

ditional and indefinite tenses in its verbs, by the tendency to make or adapt innumerable particles, but principally by the powerful and almost unlimited faculty of compounding words; joined whereunto is the facility of varying, inverting, and involving the construction, and the power of immediately and completely transferring the force of words from a material to a purely mental representation. Hence, while it is a fit instrument for effecting the loftiest designs of genius, it is no less powerful in the hands of the philosopher; and in it, and by it, have arisen those varied systems, which in ancient India, and in later Greece, and in modern Germany, have attempted to fathom the human understanding, and analyze to their primitive elements the forms of our ideas.*

And do you not see in all this, a subserviency to still nobler designs, when, in conjunction with these reflections, you look back at the order observed by God in the manifestation of his religion? For so long as his revelations were rather to be preserved than propagated, while his truths regarded

* As an illustration of these remarks, I may say that, in our times, the transcendental philosophy could hardly have risen in any country except Germany, whose language possesses the characteristics of the family more than any other, and could most easily permit or suggest the using of the first pronoun objectively, a violence too great, in other European languages, for them to have first devised it. In Latin, for instance, where there is no article, it is almost impossible to express it; nor could one using that language have conceived such an idea.

principally the history of man and his simplest duties towards God, when his law consisted of precepts rather of outward observance than of inward constraint, while the direction of men was managed rather by the mysterious agency of seers into futurity, than by the steady rule of unalterable law, the entire system of religion was deposited in the hands of that human family whose intellectual character and language were admirably framed for clinging with tenacity to simple traditions of early days, and for describing all that was on the outside of man, and lent themselves most effectually to the awful ministry of the prophet's mission.

But no sooner is a mighty change introduced into the groundwork of his revelation, and the faculties unto which it is addressed, than a corresponding transfer manifestly takes place in the family whereunto its ministration and principal direction are obviously committed. The religion now intended for the whole world, and for each individual of the human race, requiring in consequence a more varied evidence, to meet the wants and satisfy the longings of every tribe and every country and every age, is handed over "to other husband men," whose deeper power of thought, whose ever eager impulse to investigate, would more easily discover and bring to light its inexhaustible beauties; who would search out its connections with every other order of truth, every other system of God's dispensation; thus ever bringing forth new motives of

conviction, and new themes of praise. And in this manner Divine Wisdom, while it hath made the substance of religion one and immutable, hath yet in a manner tied its evidences to the restless wheel of man's endeavor, and mingled them with the other motives of his impelling desires; that so every step made in the prosecution of sound study and humble inquiry, may give them also a new advance, and a varied position, on which the reflecting mind may dwell with surpassing admiration. And how this hath happened with the science of Ethnography, I trust you have now sufficiently seen.

LECTURE THE THIRD;

ON

THE NATURAL HISTORY OF THE HUMAN RACE.

PART I.

HISTORY of this Science.—Division of Human Families among the Greeks.—Aristotle's Classification.—Who are his Egyptians?—Proofs that they represent the Negro race; the Scythians and the Thracians are Germanic and Mongul tribes.—Later writers.—System of Camper explained; its difficulties.—Blumenbach's System of Classification.—Division into three primary, and two secondary Families: first, by the form of the skull; secondly, by the color, hair, and iris.—Geographical distribution of families.—Distinction between Tartars and Monguls.—Labors of Dr. Prichard.—Opposers of the unity of the human race; Virey, Desmoulins, Bory de Saint-Vincent; Theory of Lamarck. RESULTS. I.—Remote examination of the subject by analogy of plants and animals.—Examples of varieties in these of a similar character to those observable in man. II.—Direct examination of phenomena on a small scale.—Tendency of one family to produce varieties possessing the characteristics of another.—Examples of more extraordinary peculiarities springing up among men.—Reflections on the identity of moral feelings in all races, as applicable to the proof of their common origin.

If St. Paul warns us to avoid perplexing ourselves with vain and endless genealogies, it might be thought that the study whereon we are now entering belongs to the forbidden class. For, assuredly, the attempt to trace out the course and origin of each variety in the human species, back to one common progenitor, must seem an almost hopeless task; when we consider how the investigation it requires has been involved in numerous and complicated questions, by the contradictory statements of writers, and by the conflicting principles on which it has been conducted. Still, the successful results of the science last discussed may well encourage us to undertake the examination of this, its sister science—the history of the human race. It may, indeed, be said that their objects are very nearly the same, even so far that a common name might perhaps be given them, descriptive of their object, with a distinctive epithet to mark the processes whereby they seek to attain it. And if the former was rightly called *philological*, this might be not unaptly styled *physiognomical Ethnography*.

The former has already brought us to the satisfactory conclusion, that so far as languages in their comparative bearings may be heard in evidence on the subject, the entire human race formed originally one family, or, in the words of the sacred penman, "were of one lip and one speech." But, if great difficulties had to be overcome for the vindication of this scriptural assertion, arising from

the great variety of idioms which now divide the tribes of earth, a stronger and more complicated one yet remains, striking more directly at the unity of the human race, and its origin from one stock. This consists in the consideration of those physical differences that distinguish the human form, in various regions of the globe.

The Word of God hath always considered mankind as descended from one parent, and the great mystery of redemption rests upon the belief that all men sinned in their common father. Suppose different and unconnected creations of men, and the deep mystery of original sin, and the glorious mystery of redemption, are blotted out from religion's book. Is it not then important to answer their reasoning, who maintain it is impossible to reduce the many varieties of human families into one species, or trace them to one common progenitor; who assert that natural history doth show such deeply-intrenched divisions between the physical characteristics of different nations, as that one could never have been derived from the other; and that no conceivable action of causes, either instantaneous or progressive, could have ever altered the European's shape or color into the negro's, or caused "the Ethiopian to change his skin," and produce the Asiatic race? And how shall this confutation be obtained? Assuredly by no other means than I have already suggested to you, and intend often yet to inculcate and exemplify—by the deeper study of that very science

which has engendered the objection—by the collection of yet better evidence than has already been produced—and by a well-digested classification of phenomena, whence satisfactory conclusions may be drawn.

This task, pursuant to my engagements, I enter upon this morning. I will premise a historical view of this science, dwelling, perhaps, more fully than may appear consistent with my plan, upon the earliest stages of its history, for motives which will easily be seen; I will then endeavor to classify and arrange the conclusions which the study in its present state may justly warrant us to draw, supporting them with such additional illustrations as I have been able to collect, and then will leave you to compare these conclusions with the history of the human race delivered to us in Genesis.

The mention of this sacred record brings before my mind, with regret, a passage, which being, as it were, preliminary to the very subject I am going to handle, and presenting a direct contradiction to what I have just asserted, I may not in silence pass over. "The Mosaic account," says a learned writer, "does not make it quite clear that the inhabitants of the world descended from Adam and Eve. Moreover, the entire or even partial inspiration of the various writings comprehended in the Old Testament, has been, and is, doubted by many persons, including learned divines, and distinguished oriental and biblical scholars . . . . . To the grounds of

doubt respecting inspiration, which arise from the examination of various narratives, from knowledge of the original and other oriental languages, and from the irreconcilable opposition between the passions and sentiments ascribed to the Deity by Moses and that religion of peace and love unfolded by the Evangelists, I have only to add, that the representations of all the animals being brought before Adam in the first instance, and, subsequently, of their being all collected in the ark, if we are to understand them as being applied to the living inhabitants of the whole world, are zoologically impossible." The first assertion in this quotation is supported in a note, by citing the passages where it is said, "God created man, male and female," and again (chapt. v.), "in the day that God created man, male and female he created them." These passages the author supposes to refer to a different creation from that of Eve.* I am sorry to offer any comment upon this passage, because its author, I am sure, no longer holds the opinions he here incautiously expressed. But the value of the work itself, as a great collection of important facts, connected together by very learned observations, will continue to give it weight, and insure it the perusal of the young. And therefore I will venture to make a few remarks upon the theological portion of the argument. The author's conclusions

* Lectures on Physiology, Zoology, and the Natural History of Man: *Lond.* 1819, p. 248.

from the investigation of the science are perfectly in accordance with the inspired narrative, and therefore it is doubly a pity that he should have gone out of his way to show that the contrary opinion might be held, for anything which the Scriptures teach. It was not perhaps to be expected from him that he should be acquainted with the labors of theologians, but the appeal to them warrants us in looking into their opinions. Now, taking one of the rashest and boldest interpreters that modern Germany has produced, we should find even him vindicating the different texts quoted by our author from all charge of contradiction. I allude to Eichhorn, who, upon grounds solely philological, seems to have satisfactorily proved, what Astruc had conjectured in the last century, that the book of Genesis is composed of several distinct documents, which Moses has plainly incorporated into his work, clearly distinguishable, not only by their definite and complete form, but by the use of peculiar words; as for instance, the word Jehovah which is totally absent from one, and invariably found in another. Thus the first chapter, where we are told that "God created man, male and female," without giving the details of this creation, always calls the Almighty by the name of *Elohim*, or simply God. But the fourth verse of the second chapter begins, manifestly, a new narrative or document, having a particular title: "These are the generations of the heavens and the earth," in other words, "this is the history of the creation of

heaven and earth,"* entering into the details of paradise and man's creation, and distinguishable throughout by the constant use of the title *Jehovah*, till its end with the fourth chapter. In the fifth, we have the return of the same document given in the first, or else another, in which Jehovah is not used, and where, again, man is said to have been created, male and female. Now, this being the hypothesis or system of the most "learned divine" who rejects inspiration, this divine thereby no less overthrows the scriptural deduction of a separate creation of man, besides that of Adam. For the texts quoted are shown to be only different description of the same event. With the other objections drawn against inspiration, from the "examination of the various narratives, from the knowledge of the original and other oriental languages, and from the irreconcilable opposition" between the God of Moses and the Christian religion, it would be out of place now to engage; and it is not, perhaps, very clear in what sense the learned writer's words are to be taken. Having been at some pains to make myself acquainted with "the original and other oriental languages," anyways applicable to the study of Scripture, I have not discovered that any "grounds of doubt, respecting inspiration," have

* All who are conversant in scriptural science are aware of the correspondence of these two expressions—histories being called genealogies, from their being prefaced by such documents. See Gen. vi. 9, and Matt. i 1.

arisen from this knowledge. But pass we on to more pleasant occupation.

The more marked divisions of the human race are so striking to the eye, that it was impossible for them to escape the notice of the ancients. No one, for instance, could avoid being struck with the difference in features, color, and hair, between the European and the negro. Aristotle appears to have recorded the classification prevalent in earlier and in his own times, when he tells us that the older physiognomists decided of a person's character by the resemblance of his features to "those of nations who differ in appearance and manners, as the Egyptians, Thracians, and Scythians."* As these races, or rather their characteristics, must be considered as compared to another, from which, as from a type or standard, they variously differ, which doubtless was the Grecian form, we have here a division of mankind into four distinct classes, or races, as we now call them. No attempt, as far as I am aware, has been made to investigate this point more minutely, and yet it is not without its importance. For besides thus giving the very foundation or first step in the history of a science every day growing in interest and importance, we may perhaps gather some facts useful towards examining the changes which time has introduced into the nations occupying particular tracts of country; and for these rea-

* *Διελόμενοι κατὰ τὰ ἔθνη, ὅσα διέφερε τὰς ὄψεις, καὶ τὰ ἤθη, οἷον Αἰγύπτιοι, καὶ Θρᾷκες, καὶ Σκίθαι.*—Physiognomic. cap. i. Opp *Par.* 1619, tom. i. p. 1169.

sons, even at the risk of deviating, for a moment, from the popular form I wish to preserve in these lectures, I will enter at some length into the discussion.

The first race, or distinctly characterized class of men, which Aristotle, after the older physiognomists, here mentions, is the Egyptian. By this there can be no doubt that he means the negro race; for, besides the impossibility of his omitting this in speaking of the varieties in the human species, in another place he clearly confounds the two; saying, "that persons who are very dark are also timid, being referred to the Egyptian and Ethiopian race."* Again, on another occasion, he asks the question, why the Egyptians and Ethiopians have crooked legs and distorted feet?—to which he answers, that this arises probably from the same cause as gives them both woolly hair, that is, the heat of their climate.†

Here then arises a complicated and interesting inquiry—Were the ancient Egyptians really so formed upon the negro type, that the two could be confounded together? The testimony of Aristotle is undoubtedly strong in favor of the affirmative, and becomes doubly so from the agreement of almost all the classics, especially that of the sagacious and

* Οἱ λίγαν μέλανες δειλοί. ἀναφέρεται ἐπὶ τοὺς Αἰγυπτίους, καὶ Αἰθίοπας.—Ib. cap. vi. p. 1180.

† Διὰ τὶ οἱ Αἰθίοπες καὶ οἱ Αἰγύπτιοι βλαισιοί εἰσιν· . . . δηλοῦσι δὲ καὶ αἱ τρίχες οὐλοτέρας γὰρ ἔχουσιν.—Problem. Sec. xiv. 4 tom. ii. p. 750.

accurate Herodotus. For, speaking of the Colchi, he says they are proved to be descendants of the Egyptians, *ὅτι μελάγχροές εἰσὶ καὶ οὐλότριχες*,* "because they are black and woolly headed." Here, as in the philosopher, we have the two most definite characteristics of the negro race attributed to the Egyptians.

Blumenbach, whose name I shall often have to mention with praise, has manifestly a favorite theory regarding the physiognomy of the Egyptians. In his invaluable "Decads of Skulls," he first hinted that it is impossible to suppose, during so many ages of embalming, no variety in the national type.† In 1808, he more clearly expresses his opinion, that monuments prove the existence of three distinct forms or physiognomies among the inhabitants of Egypt.‡ Three years later he entered more fully into this inquiry, and gave the monuments which, he thought, bore him out in his hypothesis. The first of these he considers to approach to the negro model, the second to the Hindoo, the third to the Berber, or ordinary Egyptian head.§ But I think an unprejudiced observer will not easily follow him so far. The first head has nothing in common

* Lib. ii. § civ. tom. i. p. 157, ed. *Lond.* 1824.

† Decas collectionis suæ craniorum diversorum gentium illustratæ: *Götting.* 1790, p. 14.

‡ Specimen historiæ naturalis antiquæ artis operibus illustratæ: *Ibid.* 1808, p. 11.

§ "Beiträge zur Naturgeschichte," 2ter Th. *Gött.* 1811 "Dreyerley National Physiognomie unter den alten Ægyptern," p. 130.

with the black race, but is only a coarser representation of the Egyptian type; the second is but its mythological or ideal purification. To make out this system from monuments, two things appear wanting; first, that instead of single representations, which may be called only sporadic or casual, classes of monuments should have been pointed out wherein the different characters are preserved; for occasional deviations from the ordinary course are to be found in every law; secondly, that some chronological relation be established between the different classes, so to prove that the change which he supposes, occurred at different epochs in the national features. Neither of these points, however, has been attempted.

All the remains of the Egyptians oppose the statements of the classics I have quoted. For as to their color and hair, nothing can be more clearly represented than they are on their monuments. We always see the bodies of the natives painted of a red or tawny color, with long flowing hair, where the head-dress allows it to be seen; while we often see the negroes represented beside them by a jet-black color, frizzled hair, and perfect negro features, precisely as they really are at the present day.* But we have still more precious monuments than these painted representations in the very mummies themselves, the skulls of which, as Mr. Lawrence observes, invariably have the

* See the colored plates in Hoskins's "Travels in Ethiopia."

European form, without a trace of the negro shape.* And as to the hair, we may give, for a general description, the account given by M. Villoteau of the hair of a mummy opened under his direction: "Les cheveux étaient noirs. . bien plantés, longs, et divisés en nattes retroussées sur la tête."†

It is not easy to reconcile the conflicting results thus obtained from writers and from monuments, and it is no wonder that learned men should have differed widely in opinion on the subject. I should think the best solution is, that Egypt was the country where the Greeks most easily saw the inhabitants of interior Africa, many of whom doubtless flocked thither and were settled there, or served in the army as tributaries or provincials, as they have done in later times; and thus they came to be confounded by writers with the country where alone they knew them, and were considered a part of the indigenous population. Some such hypothesis must be adopted to reconcile writers among themselves; for Ammianus Marcellinus writes that the Egyptians were only dark and blackish, "homines Ægyptii plerumque subfusculi sunt et atrati."‡ Thus much, however, is perfectly certain, that by the Egyptian variety, which he places first among

* "Lectures," p. 345.

† Ap. De Sacy, "Relation de l' Egypte, par Abd-Allatif:" *Paris*, 1810, p. 269.

‡ Lib. xxii. in fine; in "Scriptor. Hist. Rom.:" *Heidelb.* 1743, tom. ii. p. 518.

those of the human species, Aristotle means the black or negro race.

The next upon his list are the Scythians; and Hippocrates in like manner mentions them as possessing characteristics common to all their tribes except one, no less marked and distinctive on the one side, than those of the Egyptians on the other.* Though ancient Scythia occupied the country now in great measure peopled by tribes belonging to what is called the Mongul race, whom the ancient Scythians greatly resembled in the nomadic form of their lives, we cannot for a moment suppose that a tawny or olive-colored race would be placed by writers like Aristotle and Hippocrates, as the variety contrasting with the Greek in an opposite direction from the negro. There can be no doubt but the Scythians mentioned by Aristotle, in his classification of the human races, were the Germanic tribes, which were found scattered over the whole of Scythia. This country, as described by Herodotus, is not, like the Scythia of Ptolemy, confined to northern Asia, but also comprehended Dacia, Mœsia, and all the country north of Thrace.† Now there can be no question but the inhabitants of these regions were Germanic; for besides their representation on monuments, the descriptions given of them by Ovid in his exile present all the

* Ὅτι πολὺ ἀπήλλακται τῶν λοιπῶν ἀνθρώπων τὸ Σκυθικὸν γένος, καὶ ἔοικεν αὐτὸ ἑωυτέῳ, ὥσπερ τὸ Αἰγύπτιον.—De Aere, Locis, et Aquis, ed. *Genev.* 1657, tom. i. p. 291.

† See lib. iv. § xcix. p. 327.

traits of the ancient Germans. Thus their hair is described as yellow or light-colored:

> "Hic mea cui recitem nisi flavis scripta Corallis,
> Quasque alias gentes barbarus Ister habet."*

And as always unshorn:

> "Mixta sit hæc (*gens*) quamvis inter Graiosque Getasque,
> A male pacatis plus trahit ora Getis,
> Vox fera, trux vultus, verissima martis imago,
> Non coma, non ulla barba resecta manu."†

Ovid, too, it need scarcely be noted, speaks in almost every page of his place of exile as Scythia.

But thus far we hardly needed proof. It is far more important to note that Herodotus, with his usual accuracy, has clearly distinguished two races as occupying the wide regions of Asiatic Scythia—the Germanic, according to the ancient classification, and the Mongul. For, he tells us, that above the Sarmatians, and consequently, as Breiger well observes, about the territory of Astrakan, on the Jaik,‡ there lived a tribe called the Budini, "a great and numerous nation, with eyes exceedingly

* "Epist. de Ponto," lib. iv. ep. ii. 37. The Coralli seem to be confounded with the Getæ, on comparing Ep. viii. 83, with x. 2. A fanciful etymologist might consider them as the ancestors of the Kourilians.

† "Trist." lib. v. eleg. vii. 11. Lucan (lib. i.), speaking of a German tribe, says—

> "Et vos crinigeros bellis arcere Chaycos."

‡ "Commentatio de Difficilioribus quibusdam Asiæ Herodoteæ." Prefixed to the cited edition, p. clxxxiv.

blue, and red hair."* Here, then, we have a Scythian tribe, with all the characteristics attributed by the ancients to the Germanic nations.† But, in another place, Herodotus describes the Agrippæi, no less a Scythian people, with very different traits. "They are said," he writes, "to be bald from their births, both males and females, with flat noses and large chins."‡ Their manners, he adds, are perfectly harmless and innocent. Now compare these marks with the characteristics of the Mongul race, and you will at once see how accurate Herodotus is, and how certainly the same race of nomads, as now, partly occupied the northern tracts of Asia in his time. Blumenbach gives us the following distinctives of the Mongul family: a flat nose (*nasus simus*), corresponding to the σιμοὶ of Herodotus, and a rather prominent chin (*mentum prominulum*, γένειον μεγάλον).§ But what are we to say to the baldness from birth? Is it to be accounted a fable; seeing that the judicious father of profane history, whose correctness every new re-

* Βουδῖνοι δὲ ἔθνος ἐὸν μέγα καὶ πολλὸν, γλαυκόν τε ἰσχυρῶς ἐστὶ καὶ πυῤῥόν.—Melpom. § cviii. tom. i. p. 327. Cf. § xxi. p. 292.

† See them collected by Corringius, "De habitus corporum Germanorum antiqui et novi causis, liber singularis:" *Frankfort*, 1727, with a voluminous commentary by Burggraff, pp. 29–100.

‡ Ἄνθρωποι λεγόμενοι εἶναι πάντες φαλακροὶ ἐκ γενεῆς γινόμενοι, καὶ ἔρσενες, καὶ θήλεαι ὁμοίως, καὶ σιμοὶ, καὶ γένεια ἔχοντες μεγάλα. Ib. § xxiii. p. 293.

§ "De Generis Humani Varietate nativa:" *Götting.* 1705, p. 173.

search confirms, is careful to qualify his assertion by an expression of doubt? λεγόμενοι, he says, εἶναι πάντες φαλακροὶ—they are *said* to be all bald. I might answer that Blumenbach, in another place, describing the hair of different races, gives that of the Monguls as *rarus*—thin, or, as Virey expresses it, *clair-semé*.* But I think this difficulty is still better removed by what Pallas relates of the Calmucks:—"Ils rasent la tête à leurs enfans mâles, dès la plus tendre enfance;" and again, "les hommes ont tous la tête rasée."† By this striking custom we may explain how Herodotus, speaking of the Agrippæi, should often call them by no other name than *the bald people*—φαλακροὶ τουτοί. ‡

This mixture of tribes probably gave rise to the confusion sometimes observable in ancient writers, when they characterize the Scythians: for they blend together features which could not well have belonged to one race, but appear taken from both parts of the population. Such, at least, appears to be the case in the two principal physiognomical writers of antiquity, Adamantius and Polemon. I will confine myself to the former, as the latter is nothing more than his transcriber. Adamantius, therefore, who professes to follow Aristotle, like him speaks of the Scythians and Ethiopians as of the

* *Ibid.* p, 166. Virey, "Histoire naturelle du Genre Humain;" *Bruxell.* 1827, vol. i. p. 411.

† "Voyages en différentes provinces de l'Empire de Russie;" *Par.* 1788, tom. i. pp. 502, 503.

‡ *Uti sup.* §§ xxiv. xxv. pp. 293, *seqq.*

extremes of the human race.* Now, in another place, he gives us the characteristics of nations near the north, and of those under the torrid zone, meaning therefore, probably, those whom he had before designated as Scythians and Ethiopians. Of the former he says: "Generally speaking, the inhabitants of the north are well-formed, *xanthous*, fair, with soft hair, blue eyes, and flat noses; have thick legs, loose flesh, and large paunches."† It is evident that this description in great part applies to some Germanic nation, with the exception of the flat nose, loose flesh, and obesity, which seem to have been borrowed from the description of some Mongul tribe; though the last of these characteristics could only apply to a few, as the Kirghis or Bashkirs.‡

This dispersion of Germanic tribes over the whole of Scythia appears to me a very interesting

* "Physiogn." l. i. "Scriptores Physiognom. Veteres:" *Altemb.* 1780, p. 318. "Polemon." *Ibid.* p. 173. Adamantius, however, there clearly distinguishes the Egyptian from the Ethiopian features.

† Ὡς δὲ πολὺ οἱ μὲν ὑπὸ τῇ ἄρκτῳ οἰκοῦντες, εὐμήκεις εἰσὶ, ξανθοὶ λευκοὶ τὰς κόμας, ἀπαλότριχες, γλαυκοὶ, σιμοὶ, παχυσκελεῖς, περιπληθεῖς σαρκὶ λαγαρᾷ, προγάστορες.—Lib. ii. § xxiii. p. 409. In my translation, I have inserted a comma after *λευκοι*, and erased it after *κομας*; first, because otherwise there is either a useless repetition or a contradiction as to the color of the hair already expressed by the epithet *ξανθοὶ*; secondly, because in the corresponding passage of Polemon, the entire member *τας—γλαυκοι* is omitted, as he says, *λευκοὶ, σιμοὶ*, etc.—Lib. i. § iii. p. 181.

‡ Pallas, *ubi sup.* p. 496.

fact; and after having thus endeavored to trace them by the aid of Greek writers, it was a great satisfaction to me to find the fact confirmed by a lamented orientalist, from sources of a different class. "How much soever this assertion may appear a paradox," says Abel-Rémusat, "I think it will be proved that the family of the Gothic nations once occupied large tracts of Tartary; that some of its branches inhabited Transoxana, and even reached the Altai mountains; and that they were well known to the people of eastern Asia, who could not fail to be struck with the singularity of their languages, their light hair, blue eyes, and white complexions; traits particularly remarkable in the midst of men dark-colored, and with brown eyes and dark hair, who have in the end occupied their place. When I shall have given the proofs I have collected, it will be seen whether my assertion is too rash."* These proofs he did not, I believe, live to publish; but the learned and sagacious Ritter has most satisfactorily unravelled the complicated history of the population of central Asia, so entangled by the confusion of names transferred from one nation to another. He considers tribes of the Indo-European or Indo-Germanic race to have been the first inhabitants of the central plateau of Asia, who are represented by all Chinese writers as having red hair and blue eyes. In the second century before Christ, some remains,

* "Recherches sur les Langues Tartares," p. xlv.

which had been driven westward by the Hiong-nu, were still in force on the shores of Lake Bhalkush, and the river Hi, under the name of Ui-siun, or U-siun; but being afterwards weakened, they were driven to the west in the fourth century, and probably fell into the stream of northern inundation, then beginning to move towards the south.*

But what I wish principally to conclude from this lengthy disquisition is, that with this mixture of tribes among the Scythians, we cannot doubt but it was the Germanic family which Aristotle and Hippocrates had in view when they described the Scythians as differing by their fairness from the Greeks, as much as did the Ethiopians by their dusky hue. And in fact, the Latin writers, to whom the Germans were more familiarly known than to the Greeks, contrast them with the Ethiopians, as though they too formed the opposite extremes of the human family. "The color of the Ethiopian," says Seneca, "is not singular among his countrymen, nor is red hair tied up in a knot a peculiarity among the Germans."† Martial says, in like manner—

> "Crinibus in nodum tortis venere Sicambri,
> Atque aliter tortis crinibus Æthiopes." ‡

The third race of men enumerated by Aristotle consists of the Thracians. It is, I think, stil.

* "Die Erdkunde Verhältniss zur Natur und zur Geschichte des Menschen," 2 Th. ii. Buch. Asien, 1 Band. *Berl* 1832, pp. 431–435.

† "De Ira," lib. iii. c. xxvi. ‡ "Spectacul." lib. Epig. iii

more difficult to decide whom he means to characterize by this name; though it is evident that he must mean a nation having peculiar distinctives in color and feature, sufficient to mark them when mixed with the other races he has described. This would naturally lead us to conjecture that in his classification they correspond to the olive or Mongul race, the only one wherewith he must have been acquainted, that finds no place in his enumeration. In this conjecture I feel confirmed by the following considerations:

First, as Aristotle is guided chiefly by color, in his distribution of mankind into races, and the two classes which we have examined give us the extremes, this must represent an intermediate color, differing however from the Grecian complexion. But there is a passage in Julius Firmicus, overlooked by the commentators of Aristotle, which gives us the same ternary division, with the colors of each race. "In the first place," he writes, "speaking of the characters and colors of men, they agree in saying,—if by the mixed influence of the stars the characters and complexion of men are distributed; and if the course of the heavenly bodies, by a certain kind of artful painting, form the lineaments of mortal bodies—that is, if the moon makes men white, Mars red, and Saturn black, how comes it that in Ethiopia all are born black, in Germany white, and in Thrace red?"* By this it

* "Primum itaque de moribus hominum coloribusque conveniunt dicentes: Si stellarum mixturis mores hominibus

would apppear that the copper or olive color was the characteristic of the Thracian family, and consequently that it corresponded to what we now should call the Mongul race.

Secondly, Homer has described the Thracians as *ἀκρόκομοι*,* or as having their hair only on the crown of the head. This seems opposed to the description given us of the Grecian and Germanic fashion which rather cherished an abundant growth of hair, but is a very striking characteristic of Kalmuck costume, wherein, as in that of many other Mongul nations, the head is shaved, and only a tuft or tress of hair is left on the crown.†

Thirdly, we may strengthen this conjecture from another passage in Aristotle, where he observes that one nation among the Thracians is so rude as not to go, in their arithmetic, beyond the number four.‡ Upon this assertion, besides deducing therefrom that the Thracians were not one nation, but a collection of tribes, I will remark, that a similar ignorance is said to have been discovered among people of the Mongul race, as, for example, the Kamstchatkadales. Indeed it is difficult to suppose that

coloresque distribuuntur, et quasi quodam picturæ genere, atque artificio, stellarum cursus mortalium corporum lineamenta componunt; hoc est, si ♃ fecit candidos, ♄ rubros, ♂ nigros; cur omnes in Æthiopia nigri, in Germania candidi, in Thracia rubri procreantur?"—Astronomicon, lib. i. c. i. ed. *Basil.* 1551, p. 3.

* "Iliad," Δ 533.

† Pallas, *ubi sup. p.* 502.

‡ Problem. sec. xv. 3, tom. ii. p. 753.

Pelasgic or Germanic tribes, who are proved, by the conformity of their numerals with those of southern Asia, to have separated from them after that system had been framed, and a certain civilization prevailed, should have fallen into such a state of miserable barbarism.

I might add other reflections, such as the prevalence of *shamanism* in the religion of Thessaly, and the origin of horsemanship, attributed in fable to the same country; both points indicating a relationship with the race now occupying nothern and central Asia. Nor need I observe that the boundaries between that country and Thrace are so badly defined as to be often neglected or overlooked by ancient writers. Probably, therefore, mixed with the population of Thrace, where wandering tribes of the olive or copper-colored race, whom Aristotle and Julius Firmicus justly placed in a distinct class.

But assuredly I have dwelt too long upon this early period in the history of our science, led away by the unfrequented state of the path I have pursued: nor dare I flatter myself that, in this instance at least, I have verified the poet's opinion:

> ——τὰ μακρὰ τῶν σμικρῶν λόγων
> Ἐπίπροσθέν ἐστι, καὶ σαφῆ μᾶλλον κλύειν.*

For many ages, the same obvious classification of mankind, formed upon the prevalent complexion in different parts of the world, was followed with

* Euripid. "Orest." 640

out much discrimination; so that the human race might be considered as divided, like the earth which it inhabited, into three classes or zones; the very white occupying the colder regions, the black possessing the torrid, and the fair the temperate region. Such, for instance, is the division adopted by the Arabic historian Abulpharaj.* In the last century, this simple arrangement was modified till it assumed the form of a complicated system, in consequence of the discovery of many intermediate shades in the color of nations, not easily to be introduced into that three-fold division. Leibnitz, Linnæus, Buffon, Kant, Hunter, Zimmermann, Meiners, Klügel, and others, proposed different classifications based upon the same principle, which, as this is now universally rejected, possess but little interest, and are not easy to remember.

The first who proposed a new basis for this important study was Governor Pownall, who, though he adopted color as the ground of his classification, yet suggested the propriety of attending to the form of the skull in the various families of mankind.† But Camper has the merit of having first devised a rule by which the heads of different nations might be mutually compared, so as to give definite and characteristic results.

Camper enjoyed peculiar advantages for this

* "Historia Dynastiarum:" *Oxf.* 1663, p. 3.

† "New Collection of Voyages;" *Lond.* 1767, vol. ii. p. 273

undertaking, from having united two sciences not often pursued by the same individual—a perfect and practical knowledge of art, and an extensive acquaintance with physiology and comparative anatomy. It was seeing how imperfectly the best artists, whom he copied, had caught the features and form of the negro, that led him to examine what were the essential peculiarities of his configuration.* He then extended his researches to the heads of other nations, and discovered, as he supposed, a cannon or rule by which they might be measured, with certain and regular results. This rule consists in what he calls the facial line, and is applied as follows: The skull is viewed in profile, and first a line is drawn from the entrance of the ear (the *meatus auditorius*) to the base of the nostrils; then a second, from the most prominent point of the forehead to the extreme border of the upper jaw, where the teeth are rooted (the alveolar process of the superior maxillary bone). It is evident that an angle will be formed at the intersection of these two lines, and the measure of that angle, or, in other words, the inclination of the line from the brow to the jaw, gives what is called the facial line, and forms in Camper's system the specific characteristic of each human family.† By inspecting the drawings (Pl. 1) you will

* "Dissertation physique de M. Pierre Camper, sur les Différences réelles que présentent les traits du visage chez les hommes de différens pays," etc.: *Utrecht*, 1791, p. 3.

† *Ibid.* p. 35.

PLATE I

CAMPER'S SYSTEM

Fig 2

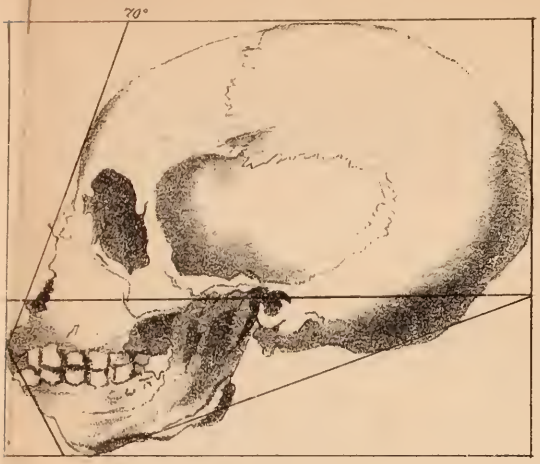


Fig 3

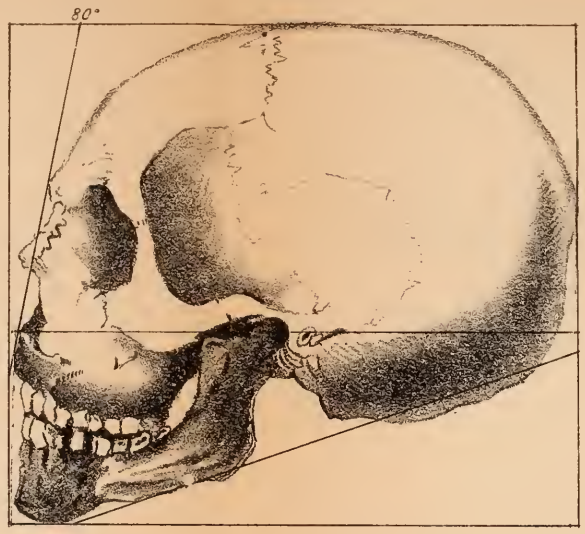
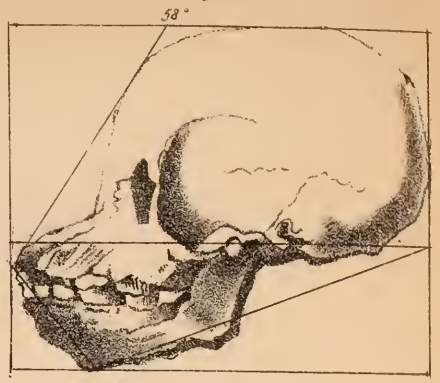


Fig 1

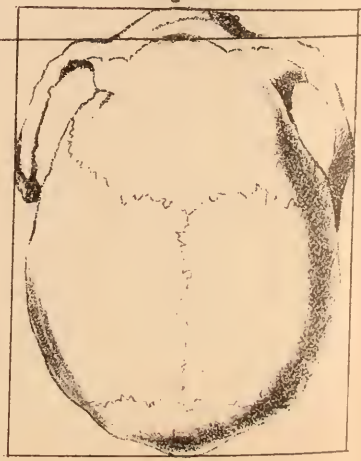


BLUMENBACH'S SYSTEM.

Fig 5.

Fig 4

Fig. 6.



Lith by Krimmel & Voigt 254 & 256 Canal St. N.Y.

easily perceive the application of this rule. From them it appears that the facial angle, in the baboon nearest approaching the human shape, is of about 58 degrees (fig. 1); that in the negro and Kalmuck it measures 70° (fig. 2); and in the European, 80° (fig. 3). The ancients, who doubtless perceived this increase of the angle in proportion to the advance in the intellectual scale, went beyond the line found in nature, and in their sublimer works have ventured to give an overhanging swelling prominence to the forehead, which increase the facial angle to 95°, or even 100°.* This fact Blumenbach has very positively denied, saying that all those representations of ancient art which gave such an angle, are not correct copies.† But I think whoever will examine the heads of Jupiter in the Vatican Museum, particularly the bust in the large circular hall, or the more defaced heads of the Elgin marbles, will be satisfied that Camper is accurate in this respect.

To this system of measurement proposed by him, Blumenbach has brought more serious objections. He observes that even Camper himself admits a great vagueness in fixing the origin of his lines; but principally he objects that it is a measurement totally inapplicable to those races or

* See Camper's second plate, figures 3 and 4, and pp. 42 and 55. Roman art has the smaller, Grecian the larger, of these two angles.

† "Specimen Historiæ Naturalis antiquæ artis operibus illustratæ;" *Götting.* 1803, p. 13.

families whose most marked distinctive consists in the breadth of the skull rather than in the projection of its upper portion.*

It is to this sagacious and assiduous physiologist that we owe the system of classification now almost universally followed, and the principles by which it is conducted. His museum contains the most complete collection in existence of skulls belonging to members of almost every nation in the globe. Not content with the results given him by their study, he has collected from every branch of natural science, and from every department of literature, whatever can throw light upon the history of the human race, and account for the varieties it contains. His works are, in fact, a storehouse from which all must draw, and the most voluminous works upon this study which have appeared since his time, have done, and can do little more than confirm, by additional evidence, what he had already proved.

Blumenbach's classification is determined primarily by the form of the cranium, and secondarily by the color of the hair, skin, and iris.

It may at first appear to you that an acquaintance with the anatomy or construction of the skull is necessary for rightly comprehending his system. This, however, is not the case; for a very few observations, with a drawing before us, will soon convey

* "De Generis Humani Varietate nativa;" *Gött.* 1795, p. 200.

all the information necessary on this subject. You have only to pay attention to the following particulars. The head or skull, when viewed from above, presents more or less an oval form, smoothly rounded at the back, but rough and less regular in front, in consequence of the bones of the face. If we examine these, we shall see that they project in different degrees, and may be divided into three portions: first, the forehead, which may be more or less depressed; then the bones of the nose; and below these the jaws, with the respective teeth. Particular attention, too, must be paid to the manner in which the *malar*, or cheek-bones, are connected with the *temporal*, or bones at the ears, by means of an arch called the zygoma, so formed as to allow strong muscles to pass under it, and be fixed to the lower jaw. (See fig. 5.)

Now Blumenbach's rule consists precisely in viewing the skull as I have described it, and attending to the particulars I have mentioned. He places it in its natural position upon a table, and then looks upon it from above and behind; and the relative forms and proportions of the parts thus visible give him what he calls the vertical rule, or *norma verticalis*. Following this, he divides the entire human race into three principal families, with two intermediate ones. The three leading divisions he calls the Caucasian, or central; secondly, the Ethiopian; and thirdly, the Mongul, or two extreme varieties. By inspecting the drawings made from his works, you will instantly perceive their characteristic differ-

ences. In the Caucasian, or, as others have called it, the Circassian variety (fig 4), the general form of the skull is more symmetrical, and the zygomatic arches enter into the general outline, and the cheek and jaw-bones are concealed entirely by the greater prominence of the forehead. From this type the other two depart in opposite directions, the negro by its greater length and narrowness, the Mongul by its excessive breadth. In the negro's skull (fig 5), you see the remarkable lateral compression of the fore part of the skull, by which the arches aforesaid, though themselves much flattened, yet come to protrude much beyond it; and you will observe that the lower part of the face comes forward so much beyond the upper, that not only the cheek-bones, but the whole of the jaw, and even the teeth are visible from above. The general surface of the skull is also remarkably elongated and compressed.

The Mongul cranium is distinguished by the extraordinary breadth of its front, in which the zygomatic arch is completely detached from the general circumference; not so much, as in the negro, on account of any depression in this, as from the enormous lateral prominence of the cheek-bones; which, being at the same time flat, give the peculiar expression of the Mongul face. The forehead, too, is much depressed, and the upper jaw protuberant, so as to be visible when viewed in the vertical direction. (Fig. 6.)

Between the Caucasian variety and each of the two others, is an intermediate class, possessing, to

a certain degree, the distinctives of the extremes, and forming a transition from the centre to them. That between the Caucasian and negro families is the Malay; the link between the former and the Mongul is the American variety.

Besides this great and primary characteristic, there are others of a secondary, though not less distinguishable nature: they consist in the complexion, hair, and eyes of the different races. The three principal families are distinguished by as many different colors; the Caucasian by white, the negro by black, and the Mongul by the olive or yellow complexion: the intermediate races have also intermediate hues, the Americans being copper-colored, and the Malays tawny.

The color of the hair and of the iris follows that of the skin in a sufficiently obvious manner. Even in the fair or Caucasian race, to which we belong, persons with very fair or ruddy complexions have always the hair red, or light-colored, and the eyes blue or of a light shade; and this has been called the *xanthous* variety of the white race. In persons with a brown skin, the hair is invariably black, and the eye darker; and these are called the *melanic* variety. This conformity of color in these different parts was well known to the ancients, who observed it strictly in their personal descriptions. Thus Ausonius, in his Idyll on Bissula, who belonged to the first class, says of her:

> ——"Germana maneret
> Ut facies, oculos cærula, flava comis."

And in another fragment he gives her the corresponding complexion :

> " Pumiceas confunde rosas, et lilia misce,
> Quique erit ex illis color aëris ipse sit oris."*

So Horace describes a youth of the second variety—

> " Et Lycum nigris oculis, nigroque
> Crine decorum."†

From these remarks you will easily understand, that in both the negro and Mongul races, in which the skin is dark, the hair will be black and the eye dark. The hair, too, besides its color, has a peculiar character in each race; in the white race it is flexible, flowing, moderately thick, and soft; in the negro, very thick-set, strong, short, and curly; in the Mongul, stiff, thin, and straight.

In every one of these races, there springs up occasionally a variety which ought to be mentioned, and which appears, in the human species at least, to bear a morbid character. I allude to *albinos*, or persons in whom the skin is of a dazzling whiteness, with ha - excessively light, and almost colorless, and red eyes. These, too, are peculiarly sensitive, and can bear but little light; so that albinos are vulgarly supposed to see in the dark: they are, also, generally very feeble in health and intellect. They are to be found in every country: in a village

* " Idyll." vii. 9, et Fragm. annex.

† " Od." lib. i. 32.

a few miles distant from this city (Rome) is a highly respectable family, in which several of the children belong to this class. The sagacious Arabic physician Abdollatiph mentions one whom he saw among the Copts, as a natural curiosity.* Mr Crawfurd throws discredit on Sonnerat's description of the Papuans of New Guinea, because he says that their hair is of a brilliant black, or fiery red.† Sonnerat, however, seems to have had in view some albinos, whose hair, among the blacks, assumes a sandy or reddish color. Even in Africa, among the darkest race, they are far from uncommon, and form, of course, a much stronger contrast, by their snowy whiteness, with the ebony hue of their neighbors.‡

I pass over many other minor distinctives of these human races, such as the direction of the teeth, the stature and form of the body; and proceed to trace for you the geographical limitations of each great family.

The Caucasian comprehends all the nations of Europe, excepting the Laplanders, Finlanders, and Hungarians; the inhabitants of Western Asia, including Arabia, Persia, and upwards as far as the

* "Among the wonders of nature of this time, is to be reckoned that a child was born with white hair; which did not resemble the grayness of old age, but rather approached to a red."—De Mirabil. Ægypt: *Oxon.* 1800, p. 278.

† *Ubi sup.* p. 27.

‡ See a minute description of a white negro from Senegal in the "Description de la Nigritie, par M. P. D. P." *Amst.* 1789. p 60.

river Oby, the Caspian Sea, and the Ganges; and those of Northern Africa.

The negro race comprises all the remaining inhabitants of this last-named quarter of the globe.

The Mongul race embraces all the nations of Asia not included in the Caucasian or Malayan varieties, and takes in the European tribes excluded by the former, as well as the Esquimaux in North America.

The Malayan embraces the natives of the peninsula of Malacca, and of Australia and Polynesia, distinguished in ethnography by the name of the Papuan tribes.

Finally, the American includes all the aborigines of the New World, excepting the Esquimaux.

I must observe that considerable confusion and perplexity exists regarding the name and extent of what, after Blumenbach, I have called the "Mongul race." Blumenbach gives several reasons for rejecting the old name of "Tartar," which is however, still retained by many writers on the subject. It is not easy, indeed, to unravel the genealogy of the tribes which have been confusedly called by the two names, nor to establish the limitations of the different races into which they run. I will, however, try to explain it as far as possible. The Turks are often called Tartars, and the invaders of western Asia under Tschingis Khan, are sometimes ca led Tartars, and sometimes Monguls. The Mantchous are equally subject to vague classification.

Historically, the Turks, Tartars, and Monguls,

are perfectly distinct nations. According to Ritter, who has, certainly, most profoundly examined all questions of geographical history, the first of these, under the name of Hiong-nu, occupied all the north of China; they separated into two kingdoms in the first century, disappeared from history in the fourth, recovered their dominion in the following, and later, were swept away by the irresistible power of Tschingis Khan, and so received the name of "Tartars," which they consider a reproach. The Tartars, or Ta-ta, as they are called by Chinese historians, and Monguls, were also distinct nations, or rather, perhaps, tribes of one nation; their own origin being, according to Abulghazi,* from two brothers, who bore those names. In the eleventh century they formed two of four tribes settled in the Inschan mountains, near the Hoang-ho river. Tschingis Khan, being born of a Mongul father, and a Tata mother, united the two, and gave the united nation the name of "Monguls;" but his chief officers and nobles being Tartars, they were more generally known by this name which is commonly used in popular history.†

Philologically considered, they are classified together by Abel-Rémusat, who devoted a great portion of his life to the study of their languages.

* "History of the Monguls," p. 27.

† Ritter, "Erdkunde in Verhältniss sur Natur und zur Geschichte des Menschen," 2 Th. ii. Buch, Asien, 1 Band, pp. 241–283. Dr. Prichard considers the Turks and Tartars as historically one race. "Researches," vol. ii. p. 283.

In his classical work upon them, he comprises under this name the Turks, Tartars, Mantchous, and Monguls, whom he considers only a branch of the Tartars.* In like manner, Klaproth and Balbi classify the language of these nations in one general division.†

Physiognomically viewed, there is, as I before observed, considerable difference of opinion. What we now call Turks, or the Osmanlis, undoubtedly belong to the Caucasian race, as do the Turcomans, or wandering tribes north of Persia. According to Virey, the Tartars, upon physiognomical grounds, belong to the same family as the Monguls, of which they form only a subdivision.‡ Lacepède is extremely confused in his account, and first unites the Turks and Laplanders in one family, with the greater part of the Tartars, as members of the Caucasian race, then throws into the other, "the Tartars, properly called the Monguls."§ Blumenbach clearly distinguishes the two, referring the Tartars to the Caucasian family, although he acknowledges that through the Kirghis they run insensibly into the Mongul variety. Dr. Prichard makes the same distinction, but supposes that this resemblance never occurs without an intermixture of blood.‖

* "Recherches," etc. Discours prélim. p. xxxvii.

† Klaproth, "Asia Polyglotta," p. 255. Balbi, "Atlas Ethnog." No. viii.

‡ *Ubi sup.* p. 413.

§ "Dictionnaire des Sciences naturelles," tom. xxi. art. Homme, p. 385.

‖ "De Gener. Humani Variet.' p. 306. Researches, *ibid.*

The same seems to be the opinion of Pallas, who observes that "the Monguls have nothing in common with the Tartars, except their nomadic or wandering life, and some resemblance of language. The Monguls," he continues, "differ as much from the Tartars, as the negroes from the Moors, in customs, political institutions, and features." But he likewise acknowledges that the Monguls have, by their emigrations and wars, communicated their features to the above-named, and other Tartar tribes.* This explanatory digression, concerning these nations, will not be without its use in what I have later to discuss: I shall, on the contrary, have occasion to refer to it for very important conclusions.

Before quitting this historical portion of my subject, it would be unjust not to mention a national writer, who has most ably and learnedly collected into one work all the historical and physical facts which can any way throw light upon the natural history of mankind. He examines each nation, or family of nations, distinctly, and from the observations of travellers and historians, endeavors to trace them from their original seats, and connect them with their cognate tribes. He is perhaps, too, the first writer who attempted to connect this science with the philological researches which formed the subject of our last lectures. If I had to find any fault, it would be that the learned author does not draw consequences sufficiently

* *Ubi sup.* p. 486.

definite and decisive from the mass of facts which he has collected; that the preliminary or introductory portion of the work is so far separated from the particular data to which its principles are to be applied, that a reader, giving only ordinary attention to the book, will not not easily seize the important conclusions which it has a right to suggest. It will, however, be difficult for any one in future to treat of this theme without being indebted to Dr. Prichard for a great portion of his materials.

Having thus enumerated the authors, and explained the systems, which appear most deserving of our notice, as ranged on the side of truth, it is fair to state who are our opponents, and what are their views of this science. They are to be found chiefly among French naturalists, who, unfortunately, are yet, in part at least, unreclaimed from the skeptical theories of the last century. Voltaire, in fact, was one of the first to observe, that "none but a blind man can doubt that the whites, negroes, albinos, Hottentots, Laplanders, Chinese, and Americans, are entirely distinct races."* Desmoulins, in an essay which, to the credit of the Académie des Sciences, was rejected by that learned body, asserts the existence of eleven independent families of the human race.† Mons. Bory de Saint-Vincent goes further still, and increases the

* "Histoire de Russie sous Pierre le Grand," c. 1.

† "Histoire Naturelle des Races Humaines."

number to fifteen, which are again considerably subdivided. Thus the Adamic family, or the descendants of Adam, constitute only the second division of the Arabic species of man, the *homo Arabicus:* while we, the English, belong to the Teutonic variety of the Germanic race, which is again but the fourth fraction of the *gens braccata*, or small-clothes-wearing family of the Japhetic species, the *homo Japheticus*, who is divided into the above-mentioned class and another, somewhat more elegantly cognizanced, namely, the *gens togata*, or cloaked family.*

Virey belongs to the same school; though his works are even more revolting; from the light and wanton manner in which the most delicate points of morals and religion are handled throughout. Not content with attributing to the negro a different origin from the European, he goes so far as almost to suspect a certain fraternity between the Hottentot and the baboon.† But on this subject Lamarck has gone much further, and attempted to point out the steps whereby nature proceeds, or in former times did proceed, towards gradually developing one class of beings from another, so as to establish a graduated chain, not of simultaneous, but of successive links; and thus produced in the

* "Dictionnaire classique d'Histoire Naturelle," tom. viii. *Par.* 1825, pp. 293 and 287. The Japhetic man is himself only a division of the Leiotric or close-haired race. The unity of origin of the fifteen races is denied, p. 331.

† Op. cit. tom. ii. p. 157.

end the human species, by a metamorphosis, the inverse indeed, but not for that the less marvellous, of what we read in ancient fable. The two volumes of his *Philosophie Zoologique* are entirely directed to support this degrading theory; the first, to prove how man's bodily organization sprung from a casual though natural modification of the ape: the second, to show that the spiritual prerogatives of the human mind are but the extension of the faculties enjoyed by brutes, and only differ in quantity from their reasoning powers.* Lamarck assumes, upon slight and ill-supported grounds, that because we see in nature an existing gradation of organized beings, there must also have been a successive development, whereby animals of one class might rise into another; inasmuch as any animal, being driven, by its wants, to new or peculiar habits, thereby acquires the variation of organization necessary for them, although generations must persevere in their exercise before the effect is perceptible. Thus, for instance, a bird is driven

* "Philosophie Zoologique; ou, Exposition des considérations relatives à l'histoire naturelle des animaux, par J. B. Lamarck." *Paris*, 1830. See, for this point particularly, tom. ii. p. 445. I may here observe that Steffens denies altogether the existence of a graduated scale of beings, inasmuch as, to support it, according to him, the lowest animals should come next to the most perfect plants, whereas the links between the two orders possess the lowest qualities of each, as polypi, infusoria, algæ, etc.; the organization of all which, whether in reference to the vegetable or animal kingdom, is of the lowest kind.—Anthropologie, ii. Buch, p. 6.

by its wants to take to the water, and either swim or wade; its successors do the same; in the course of many generations, the outstretching of its claws produces a web between them, and it becomes a regular water-fowl; or it extends its limbs to walk in deeper places, and gradually its legs are prolonged to the length of the crane's or the flamingo's.* These two agencies combined, new wants, and the tendency of nature to meet them, conspired to make man out of the baboon. One race of these, probably the Angola Orang, from some unrecorded reason, lost the habit of climbing trees, or holding by their hind as well as by their fore limbs. After thus walking on the ground for many generations, the former changed into a shape more suited to their habits, and became feet, and they gradually acquired the habit of walking erect. They now no longer needed their jaws for cropping fruit or for fighting with one another, having their fore feet or hands now disposable for these purposes; and hence by degrees their snouts shortened and their face becomes more vertical. Advancing still further in this road to humanization, their grin subsided into a courtly smile, and their jabbering resolved itself into articulate sounds. "Such," he concludes, "would be the reflections which might be

* Tom i. p. 249. If some birds, he says (p. 251), which swim, have long necks, as the swan and goose, it is from their custom of plunging their heads in the water to fish. Why then, we may ask, has not the same habit produced a like effect in the duck or teal?

made, if man were distinguished from animals only by the character of his organization, and if his origin were not different from theirs."* Unfortunately, however, his second volume disposes of any other proof that man had a different origin. I hardly need detain you to confute this scheme; I will content myself with remarking that the experience of thousands of years has abundantly disproved it. How comes it that we can discover no instance of any such developments as Lamarck assumes, during this long period of observation? The bee has been striving without intermission in the art of making its sweet confection, since the days of Aristotle; the ant has been constructing its labyrinths, since Solomon recommended its example; but from the time they were described by the philosopher and the sage, till the beautiful researches of the Hubers, we are certain that they have not acquired a new perception, or a new organ for these purposes. Egypt, which, as the learned commission of French naturalists well observed, has preserved for us a museum of natural history, not only in its paintings, but in the mummies of its animals, presents us every species, after three thousand years, perfectly unchanged. What striving has there not been in man, and is there not particularly now, after new resources, after new powers, and after a greater range in the use of his senses! and yet, alas! not the sprouting of a new

* Page 357.

limb, not the expansion of a single organ, not the opening of a single new channel of perception, begins as yet to give us hope, after many thousands of years, that we shall yet reach a higher step in the scale of progressive improvement, or recede somewhat further from our consanguinity with the chattering ape.*

It is now time to proceed from the history and principles of this study, to its discoveries and results. In making you acquainted with these, and with their bearing upon what religion teaches regarding the origin of mankind, I will follow what appears to me the simplest and most satisfactory method. I will condense these results into a compendious essay upon the subject, bringing together the observations and discoveries of modern authors, interspersed with such facts as I have myself collected, and freely communicating my own reflections. By this means, I hope to put you in possession of all that can interest you on this important, but yet not perfectly elucidated, subject.

The great problem to be solved is, how could such varieties as we have seen, have taken their rise in the human species? Was it by a sudden change, which altered some portion of one great family into another; or are we to suppose a gradual *degradation*, as naturalists call it, whereby some nations or fam-

* See a very full confutation of Lamarck's system in Lyell's "Principles of Geology," vol. ii. p. 18. *Lond.* 1830. Lamarck however, denies that his theory is at all affected by the animals found in Egypt, tom. i. p. 70.

ilies passed gradually through successive shades, from one extreme to the other? And, in either case, which is to be considered the original stock? It must be owned that the present state of this science does not warrant us in expressly deciding in favor of either hypothesis, nor, consequently, in even discussing the last consequence. But, independently of this, it has arrived so far as to leave no reasonable room to doubt the common origin of every race.

For, I think we may say, after looking through all that has been done in this yet infant science, that the following points, embracing all the elements of the problem, have been satisfactorily solved. First, that accidental, or, as they are called, sporadic varieties, may rise in one race, tending to produce in it the characteristics of another; secondly, that these varieties may be perpetuated; thirdly, that climate, food, civilization, etc., may strongly influence the production of such varieties, or at least render them fixed, characteristic, and perpetual. I say that these points, if proved, em brace all the elements of the proposed problem, which is, "*Could* such varieties as we now see in the human race, have sprung up from one stock?" For if this is demonstrated, we have removed the grounds whereon the adversaries of revelation deny the unity of origin which it teaches. And, moreover, every sound philospher will, if unobjectionable prefer the simpler to the more complex hypothesis. In treating these points, it will be almost

impossible to keep them completely unmixed, especially the two first; but no inconvenience will, I trust, result from their running into one another.

The ground, before closing directly with the inquiry, is in general prepared, by writers on this science, by examining the laws which nature has followed in regard to the lower orders of creation. To begin, for instance, with plants, every observation leads us more and more to the conclusion that each species takes its rise from some common centre, whence it has gradually been propagated. The observations made by Humboldt and Bonpland in South America, by Pursh in the United States, and by Brown in New Holland, have furnished Decandolle with sufficient materials to attempt with success a geographical distribution of plants, showing the centre whence each probably proceeded. He has enumerated twenty botanical provinces, as he calls them, inhabited by indigenous or aboriginal plants. It is not therefore wonderful that when America was first discovered, not a single plant should have been there found which was known in the Old World, except such as could have had their seeds transmitted through the waters of the ocean. In the United States, out of 2,891 species of plants, only 385 are found in Northern Europe; and out of 4,100 species discovered in New Holland, only 166 are common to our countries, and of these many have been planted by the settlers.* This shows at

* See Lyell's able chapter on this subject, vol. ii. p. 66; and Prichard, vol. i. c. 2, sec. 2, p. 23. For the points of resemblance

once the tendency of nature to simplicity and unity in its origin of things; while the varieties that spring up in the vegetable world, under the influence of outward circumstances, demonstrate the existence of a modifying influence in constant action.

But the analogy between animals and man is closer and more applicable. The physical organization of both classes of animated beings is so similar, the laws whereby their individuals and their races are preserved are so identical, their subjection to the laws of morbid influences, to the operation of natural causes, and, under the different names of domestication and civilization, to the agency of artificial combinations, is so analogous, that we have almost a right to argue from the one's actual, to the other's possible, modifications.

Now, it is certain and obvious that animals, acknowledged to form one species, under peculiar circumstances divide into varieties as distinct as those observable in the human species. For instance, as to the shape of the skull, those of the mastiff and Italian greyhound differ from one another far more than those of the European and negro: and yet, every criterion which can be given of species will comprehend the two extremes, between which a chain of intermediate gradations can be clearly established. The skull, too, of the wild boar, as Blumenbach has observed, does not

the organization of plants and animals, see Camper's dissertation on that subject, "Oratio de Analogia inter Animalia et Stripes." *Gröning.* 1764.

differ less from the tame swine's, its undoubted descendant, than those of any two human races from one another.* In every species of domestic cattle, varieties as striking will be found.

Changes in the color and structure of the hair are no less ordinary and remarkable. All the fowls in Guinea, and the dogs, too, according to Beckman, are as black as the inhabitants.† The ox of the Roman campagna is invariably gray, while in some other parts of Italy the breed is mostly red; swine and sheep are also here chiefly black, while in England white is their prevailing hue. In Corsica, horses, dogs, and other animals, become beautifully spotted, and the carriage-dog, as it is called, belongs to that country. Many writers have attributed to particular rivers the quality of giving color to the cattle on their banks. Thus Vitruvius observes that the rivers of Bœotia, and the Xanthus near Troy, gave a yellow color to their herds, whence the river Xanthus took its name.‡ Mr. Stewart Rose, in his *Letters from the North of Italy*, says, that a similar quality is

* Op. cit. p. 80.

† "Voyage to and from Borneo:" *London*, 1718, p. 14.

‡ "Sunt enim Bœotiæ flumina Cephysus et Melas, Leucaniæ Crathis, Trojæ Xanthus, etc. . . . . cum pecora suis temporibus anni parantur ad conceptionem partus, per id tempus adigunter eo quotidie potum, ex eoque, quamvis sint alba, procreant aliis locis leucophæa, aliis pulla, aliis coracino colore. Igitur quoniam in Trojanis proxime flumen armenta rufa, et pecora leucophæa nascuntur; ideo id flumen Ilienses Xanthum appellavisse dicuntur."—Architect. l. viii.

attributed to the Po, at the present day.* And many of you will here probably remember the white herds of the beautiful Clitumnus, as described by the poet—

> "Hinc albi, Clitumne, greges, et maxima taurus
> Victima, sæpe tuo perfusi flumine sacro,
> Romanos ad templa Deûm duxere triumphos."†

The texture of the hair undergoes similar changes. Every attempt to produce wool in the West Indies has, I believe failed, because sheep, if transported thither, entirely lose their wool, and become covered with hair.‡ This is the same in other hot climates. "The sheep in Guinea," says Smith, "have so little resemblance to those in Europe, that a stranger, unless he heard them bleat, could hardly tell what animals they were, being covered only with light brown and black hair, like a dog;" so that a fanciful writer observes: "here the world seems inverted, for the sheep are hairy, and the

c. iii. p 162. edit De Laet. *Amst.* 1649. In the notes to this passage are added confirmatory authorities from Pliny, Theophrastus, Strabo, etc.; some evidently run into fable. Aristotle, "De Historia Animal." l. iii., gives the same etymology of the river Xanthus.

* "Letters from the North of Italy:" *Lond.* 1819, vol. i. p. 23. The idea of the natives is "that not only the indigenous beasts are white (or, to speak more precisely, cream colored), but that even foreign beeves put on the same livery on drinking the Po."

† Virgil, "Georg." ii. 146.

‡ Prichard, *ib.* p. 226.

men woolly."* A similar phenomenon occurs in the country round Angora, where almost every animal, sheep, goats, rabbits, and cats, are covered with a beautiful long, silken hair, so celebrated in oriental manufactures. Other animals are subject to this change, for Bishop Heber informs us that "dogs and horses carried into the hills from India are soon covered with wool, like the shawl-goats of that climate."†

And if we look to the general form and structure of animals, we shall find them subject to the greatest variations. None shows this more clearly than the ox, simply because on none have art and domestication been tried to a greater extent. What a contrast there is between the slow, massive, long-horned animal, which traverses the Roman streets, and the small-headed, clean-limbed breed which an English farmer most prizes! According to Bosman, "European dogs soon degenerate to a strange degree on the Gold Coast: their ears grow long and stiff, like a fox's, to the color of which animal they also incline; so that they grow very ugly in three or four years, and in as many broods their barking turns to a howl or yelp." Barbot says, in like manner, that the native "dogs are very ugly, being much like our foxes, with long upright ears;

* Smith, "New Voyage to Guinea:" *Lond.* 1745, p. 147. "New General Collection of Voyages and Travels," vol. ii. *Lond.* 1745, p. 711.

† "Narrative of a Journey through the Upper Provinces of India," 2nd edit. *Lond.* 1828, vol. ii. p. 219.

their tails long, small, and sharp at the end, without any hair, having only a naked, bare skin, either plain or spotted, and never bark, but only howl The blacks call them *cabre de matto*, which in Portuguese signifies a wild goat, because they eat them, and value their flesh beyond mutton."* Thus it appears that climate or other local circumstances have the effect, in this instance, of reducing, in a few generations, a breed of animals brought from another country to the same condition as the native race, so as to be quite distinct, and hardly traceable to its original stock. The camel likewise presents an example of extraordinary modifications. "In some caravans which we passed," says a late traveller, "were camels of a much larger kind than any I had ever seen before, and as different in their forms and proportions from the camel of Arabia as a mastiff is from a greyhound. These camels had large heads and thick necks, from the under edge of which depended a long, shaggy, dark-brown hair; their legs were short, their joints thick, and their carcasses and haunches round and fleshy, though they stood at least a foot higher from the ground than the common camels of the Arabian desert."† And, speaking of this animal, I may observe that its great characteristic, the hump upon its back, which in the Bactrian variety is doubled,

* "New Collection of Voyages," etc., p. 712.

† "Travels in Assyria, Media, and Persia," by J. S. Buckingham, 2nd edit. *Lond.* 1830, vol. i. p. 241.

is supposed by some naturalists to be an accidental deviation from the original type, arising from a sebaceous or fatty deposit in the cellular tissue of the back, in consequence of exposure to heat; just like the hunch on the zebu or Indian ox, or the tail of the Barbary and Syrian sheep, or the similar formation on the loins of the Bosjman Hottentots.*

These examples, in which I have rather sought to add to those adduced by others than to repeat what have been already collected, prove that sporadic, or accidental, varieties, may not only be produced, but, what is much more to our purpose, may be propagated among animals. Nor would it be difficult to multiply instances of this last fact, for the great dissemination of albino animals, as white rabbits, or cream-colored horses, which probably rose originally from disease, proves how well such casual varieties may be reproduced. But Dr. Prichard gives one example, which is very remarkable, that of a breed of sheep reared, within a few years, in England, and known by the name of the *ancon*, or otter breed. It sprang up from an accidental variety, or, we may say, deformity, in one animal, which communicated its pecularities so completely to its progeny, that the breed is com pletely established, and promises to be perpetual; indeed, it is highly valued on account of the shortness of its legs, which does not allow it easily to

* Levaillant, "Second Voyage," tom. ii. p. 207. Virey tom. i. p. 218.

get through fences.* It is well known, also, that the breed of cattle which produced the enormous Durham ox, was artificially produced by crossing it with such as seemed to present fine points of every sort, the basis being the kyloe, or small Highland breed; and all the cattle that arrive at any extraordinary dimensions, are connected with this race.

The reasonings sanctioned by these facts present a strong ground of analogy, applicable to the human species; nor is it easy to see why varieties as great may not have been produced, and transmitted by descent, among men, as among inferior animals. For it thus appears certain that diversities, equally affecting the form of the skull, the color and texture of the hair, and the general form of the body, do arise among animals of one stock; further, it seems proved that such difference may originally spring from some casual variety, which, owing to peculiar circumstances, becomes fixed and characteristic, and transmissible by descent. May we not, then, consider it as highly probable that, in the human species, the same causes may similarly operate, and produce no less lasting effects? And that such variations as appear within it, being no more asunder from one another than such as in the brute creation have been noted, require no more violent or extraordinary agency to account for them? But let us now come nearer

* Vol. ii. p. 550.

to the point, and take the matter more closely in hand.

It seems, then, to me clear that in each family or race, of the human species, there are occasionally produced varieties tending to establish within it the characteristics of some other. For example, red hair is considered almost exclusively confined to the Caucasian family; yet individuals exist in almost every known variety with this peculiarity. Charlevoix observed it among the Esquimaux, Sonnerat among the Papuans, Wallis among the Tahitans, and Lopes among the negroes.* This is no more surprising than that among us individuals should be found with frizzled hair; and, I think, those who have paid attention to such things, will have often observed in such persons a tendency towards some other characteristics of the Ethiopian family, as a dark complexion and thick lips. In the specimens of craniums published by Blumenbach, from his Museum, there is one of a Lithuanian, which, viewed in profile, might well be mistaken for a negro's.† But the most curious example which I have met of sporadic tendency to produce in one human race the characteristics of another, is in a recent traveller, almost the first who explored the Hauran, or district beyond the Jordan. He writes as follows: "The family residing here (at Abu-el-Beady) in charge of

* Blumenbach, p. 169.

† "Decades Craniorum," dec. 3a, pl. xxii. p. 6.

the sanctuary, were remarkable for having, with the exception of the father only, negro features, a deep black color, and crisped hair. My own opinion was that this must have been occasioned by their being born of a negress mother, as such persons are sometimes found among the Arabs, in the relation of wives or concubines; but while I could entertain no doubt, from my own observation, that the present head of the family was a pure Arab of unmixed blood, I was also assured, that both the males and females of the present and former generations were all pure Arabs by descent and marriage, and that a negress had never been known, either as a wife or slave, in the history of the family. It is certainly a very marked peculiarity of the Arabs that inhabit the valley the Jordan, that they have flatter features, darker skins, and coarser hair than any other tribes—a peculiarity rather attributable, I conceive, to the constant and intense heat of the region, than to any other cause."* If all the facts and circumstances here given can be considered sufficiently verified, we have certainly a very striking instance of approximation in individuals of one family, to the distinctives of another, and of these distinctives being transmitted by descent.

There are, indeed, examples of much more decided and stranger varieties arising among men,

* Buckingham's "Travels among the Arab Tribes:" *London*, 1825, p. 14.

than what constitute the specific characteristics of any race, and of such being continued from father to son—such varieties as would have made the problem in hand far more difficult to solve than at present it is, had they sprung up in a distant quarter of the globe, and been extended to any considerable population. The most remarkable of these is doubtless what has been traced through three generations in the family of Lambert, commonly known by the name of the *porcupine-man*. The founder of this extraordinary race was first exhibited as a boy by his father in 1731, and came from the neighborhood of Euston Hall, in Suffolk. Mr. Machin in that year described him in the *Philosophical Transactions* as having his body covered with warts as thick as pack-thread, and half an inch long: the name, however, is not given.* In 1755, he was again exhibited with the forenamed title, and was described by Mr. Baker, in a paper purporting to be a supplement to the former. But what is important is, that, being now forty years of age, he had had six children, every one of whom, at the same period, nine weeks after birth, had presented the same peculiarity; and the only surviving one, a boy eight years old, was exhibited with his father. Mr. Baker gives a drawing of the boy's hand, as

* "On an uncommon Case of a distempered Skin," by John Machin, "Philosophical Transactions," vol. xxxvii. for 1731-2 p. 299.

Mr. Machin had before of his father's.* In 1802, the children of this boy were exhibited in Germany, by a Mons. and Mde. Joanny, who pretended that they belonged to a race found in New Holland, or some other very remote place. Dr. Tilesius, however, examined them most minutely, and published the most accurate account we have of this singular family, with full-length figures of the two brothers, John, who was twenty-one, and Richard, who was thirteen years of age.† Their father, the boy of Mr. Baker's narrative, was still alive, and was gamekeeper to Lord Huntingfield, at Heaveningham Hall, in Suffolk. Upon being shown the drawing of his hand in the *Philosophical Transactions*, they both instantly recognized it by the peculiar button at the wrist.‡ Tilesius's description from page 30 to the end of his work is most minute, and corresponds exactly with that given of their progenitors. The whole of the body, excepting the palms of the hands, the soles of the feet, and the face, was covered with a series of horny excrescences of a reddish brown, hard, elastic, and about half an inch long, which rustled against one another, when rubbed with the hand. I do not know to what I can compare the appearance of this singular integument, as given in Til-

* *Ibid.* vol. xlix. p. 21.

† "Ausführliche Beschreibung und Abbildung der beiden so genannten Stachelschweinmenschen, aus der bekannten englischen Familie Lambert." *Altenburg*, 1802, fol

‡ Page 4.

esius's plates, better than to a collection of basaltic prisms, some longer, some shorter, as they are generally grouped in nature. Once a year this horny clothing was shed, and its falling off was accompanied with some degree of uneasiness; it yielded also to the action of mercury, which was tried for the purpose, but in both cases it gradually returned after a very short period.* The conclusions which Mr. Baker draws from this extraordinary phenomenon are very just, and have still greater weight now that it has been reproduced in another generation, and in two distinct instances. "It appears, therefore," says he, "past all doubt, that a race of people may be propagated by this man, having such rugged coats or coverings as himself; and if this should happen, and the accidental origin be forgotten, 'tis not impossible they might be deemed a different species of mankind: a consideration which would almost lead one to imagine that if mankind were produced from one and the same stock, the black skin of the negroes, and many other differences of a like kind, might possibly have been originally owing to some such accidental cause."†

Another more common variety, which runs in entire families, consists in supernumerary fingers. In ancient Rome it was designated by a peculiar name; and the *Sedigiti* are mentioned by Pliny and other eminent authors. Sir A. Carlisle has

* "Philosophical Transactions," vol. xlix. p. 22.

† *Ibid.*

carefully traced the history of one such family through four generations. Its name was Colburn, and the peculiarity was brought into the family by the great-grandmother of the youngest examined; it was not regular, but only attached to some children in each generation. Maupertius has mentioned other instances in Germany; and a celebrated surgeon at Berlin, Jacob Ruhe, belonged to a family with this peculiarity by the mother's side.*

Thus far, then, we have proved, both from analogy and from direct examples: first, that there is a perpetual tendency, I might say a striving, in nature, to raise up in our species varieties, often of a very extraordinary character, sometimes approximating, in a marked manner, to the peculiar and specific distinctives of a race different to that in which they arise; and secondly, that these peculiarities may be communicated, through successive generations, from father to son. A strong presumptive evidence is thus obtained that the different families, or races among men, may owe their origin to some similar occurrence; to the casual rise of a variety which, under the influence of favorable circumstances—the isolation, for instance, of the family in which it began, and its consequent marriages—became fixed and indelible in succeeding generations.

But you will ask, have we any instance of

* "Philosophical Transactions," vol. civ. 1814, part i. p. 94. Prichard, vol. ii. p. 537.

whole nations having been so changed; or, in other words, have we any example of these two deductions in operation on a larger scale? To answer this question you will allow will be closing at once with all the difficulties of the subject; and I know not where I shall better be able to interrupt the handling of this matter than at the point we have now reached.

In treating of this science we are unfortunately precluded from using a series of arguments which greatly affect its results—those moral resemblances between men of every race which could hardly be found among creatures of independent stock. I have entirely omitted, as unnecessary, the usual discussions of zoologists and physiologists, as to what is sufficient or necessary to constitute distinctness of race. For I think that, passing over the technicality of such an inquiry as unfit for our purpose, we are safe in considering animals of different species, when we discover in them habits and characters, if I may use the expression, of a totally different nature. The wolf and the lamb are not more distinguished from one another by their outward covering, and their different features, than by the contrast between their dispositions. And if this should appear to you like a comparison of extremes, I will say that the rude ferocity of the wolf, and the prowling cunning of the fox,—the gregarious and tumultuary aggression of the one, and the solitary pilfering of the other,—more clearly serve to classify them to our minds, than the dif-

ference of their forms. Now if we look at man in the most dissimilar states of social life, however brutalized or however cultivated, we shall certainly find that there is an approximation of feeling, a similarity of affections, and a facility of adaptation, which clearly shows that the faculty corresponding to the instinct of animals is identical through the entire race. The Mohawks and Ossages, the inhabitants of the Sandwich or the Pellew Islands, by short intercourse with Europeans, especially when brought into our countries, have learnt to adapt themselves to all the proprieties of life as understood by us, and formed attachments and friendships of the most affectionate nature with men of another race. The difference of organization in animals is always connected with their difference of character; the groove which any single muscle makes upon the bones of the lion shows its habits and nature; the smallest bone in the antelope exhibits a reference to its timid and fugitive disposition. But in man, whether for generations he have dozed away his days, like a listless Asiatic on the corner of his divan, or, like an American hunter, has for ages tired the wild deer in the trackless forest by his restless chase, there is nothing in his organization to show that, through custom or education, he might not have exchanged one occupation for another—nothing to prove that nature intended him for either state.

On the contrary, the similarity of moral attributes; the enduring power of domestic affections;

the disposition to establish and maintain mutual interests; the common feelings regarding property and the methods of protecting it, notwithstanding occasional deviation; the accordance upon the leading points of the moral code; and, more than all, the holy gift of speech, which secures the perpetuation of all other human characteristics, prove that men, wherever situated, however degraded they may now appear, were certainly destined for the same state, and consequently originally therein placed. And this consideration ought surely to possess great weight towards establishing in man, as its parallel one does in other animals, an identity of origin.

This reasoning is of course opposed to the popular theory of ordinary philosophers—that the natural progress of man is from barbarism to civilization, and that the savage must be considered the original type of human nature, from which we have departed by gradual efforts. But the reasoning I have pursued; the reflection that nature, or rather its Author, will place his creatures in the state for which he intended them; that, if man were formed in body, and endowed in spirit, for a social and domestic life, he can have been no more cast originally into a desert or a forest, savage and untutored, than the sea-shell can have been first produced on the mountain's top, or the elephant been created amidst the icebergs of the pole—this reflection must exclude the idea that the savage state is any but a degradation, a departure from the orig-

inal destiny and position of man. Such is the view taken by the learned Frederick Schlegel, in a valuable work, which I am glad to see a respected and learned friend of mine has at length presented to our countrymen in their own tongue: and I hope he will receive such encouragement in his undertaking as may lead him to complete the task, by translating the later works of that philosopher.

"When man," says he, "had once fallen from virtue, no determinable limit could be assigned to his degradation, nor how far he might descend by degrees, and approximate even to the level of the brute; but as from his origin he was a being essentially free, he was in consequence capable of change, and even in his organic powers most flexible. We must adopt this principle, as the only clue to guide us in our inquiries, from the negro, who, as well from his bodily strength and agility, as from his docile and, in general, excellent character, is far from occupying the lowest grade in the scale of humanity, down to the monstrous Patagonian, the almost imbecile Peshwerais, and the horrible cannibal of New Zealand, whose very portrait excites a shudder in the beholder. So far from seeking, with Rousseau and his disciples, for the true origin of mankind, and the proper foundations of the social compact, in the condition even of the best and noblest savages, we regard it on the contrary as a state of degeneracy and degradation."*

* "Philosophy of History," translated by J. B. Robertson, Esq. *London*, 1835, vol. i. pp. 48–49.

This, assuredly, is more consoling to humanity than the degrading theories of Virey or Lamarck; and yet there is immixed therewith some slight bitterness of humiliation. For, if it was revolting to think that our noble nature should be nothing more than the perfecting of the ape's maliciousness, yet is it not without some shame and sorrow that we see that nature anywhere sunk and degraded from its original beauty, till men should have been able plausibly to sustain that odious affinity. Yet may this be of "sweet use" to us in checking that pride which the superiority of our civilization too often excites by recalling to our minds that, if we and the lowest savage are but brethren of one family, we are, even as they, of a lowly origin, and they, as we, have the sublimest destiny; that, in the words of the divine poet, we are all equally

——"worms, yet made at last to form
The winged insect imped with angel plumes
That to heaven's justice unobstructed soars."*

And some such composition, some such scheme of being, whereby the two-fold alliance of man to a superior and an inferior world should be shown, some such variety of state, as might prove the existence of conflicting powers, of one which calleth him upwards by the expansion of his faculties,

* "O superbi cristiani, miseri lassi,
Che della virtù della mente infermi
Fidanza avete ne' ritrosi passi,
Non vi accorgete voi che noi siam vermi
Nati a formar l' angelica forfalla,
Che vola alla giustizia senza schermi?"—*Purgat.* x

and of one which weighs him towards the enjoyment of the mere animal life, seems natural and necessary for his complex being. For thus, to conclude with the eloquent words of a truly Christian philospher, "man stands as a living individuality, composed of nature and spirit, of outward and inward being, of necessity and freedom; to himself a mystery, to the world of spirits an object of deep thought of God's almightiness, wisdom, and love, the perfectest witness. Veiled round by his corporeal nature he sees God as at a distance, and is as certain of his existence as the heavenly spirit,—the son of revelation and the hero of faith, who is weak, and yet strong, poor, and yet possessor of the highest empire of love divine!"*

* Pabst, "Der Mensch und seine Geschichte:" *Vienna*, 1830 p. 50.

LECTURE THE FOURTH;

ON

THE NATURAL HISTORY OF THE HUMAN RACE.

PART II.

RESULTS.—Application of Linguistic Ethnography to this Study.—Proof that nations shown to be of a common stock by their languages have deviated from the family type: in the Mongal race, and in the Caucasian.—Origin of the negro race: Climate an insufficient cause.—Collection of facts to prove a change to the black color possible: the Abyssinians, Souakin Arabs, Congoese, Foulahs, etc.—Apparent example of actual transition. Objections answered.—Effects of civilization: Selluks, Monguls, Germans.—Modification and suspension of causes formerly in action.—Connections of the different races: internal division into graduated shades of difference in each; Polynesians, Malays, inhabitants of Italy.—On the type of national art.—Reflections applicable to the Christian Evidences, in reference to the authenticity of the Gospel, and the perfection of our Saviour's character.

IN my last lecture, I contented myself with the analogies which seemed to bear upon the subject of our inquiry, and endeavored to prove, both from parallel phenomena in the lower departments

of organized creation, and from the deviations occasionally observed in our own species, that a strong probability existed in favor of the varieties found in the human race having all sprung up from the same stock; and I promised on our next meeting forthwith to close with the question, and treat of it more directly. I wish, therefore, to prove that a transition must, some time or other, have taken place in entire nations, from one family to another. And to effect this purpose, I must call in the assistance of a new test, for which our two first conferences will have prepared you—the comparative study of languages.

I suppose no one has yet doubted, or is likely to doubt, that nations speaking languages with a strong affinity between them, must originally have been united somehow together. Even those who deny the common origin of the human race, allow that identity or similarity, and, particularly, strong grammatical affinity, of language, between nations however distant, cannot be the result of chance, but proves some real connection of origin, or early relationship. This, even if it had not been mathematically proved by Dr. Young, as, on a former occasion, I showed you, is self-evident; for the relationship which I exposed to you between some languages, the Sanscrit, for instance, and Greek, cannot possibly have been the result of accident. Hence, if two nations speak, and have spoken, as far as history can reach, dialects of the same tongue, we must conclude them to have had a common

origin; unless one of them, at least, can be shown to have changed its language, an hypothesis always requiring the strongest evidence; for experience proves the extraordinary tenacity with which even small communities keep hold of their original language. The *Sette Comuni*, a small German colony established, beyond the reach of historical documents, in the north of Italy, the Greeks of Piana dei Greci, near Palermo, the Flemish clothiers in Wales, settled there for many centuries, all retain dialects, more or less impure, of their mother tongue, and afford some of the many proofs which might be brought, how difficult it is to root out any language.

Having thus established one fixed and unalterable element, it affords a certain test whether the other has remained unchanged; or, to speak more plainly, if identity of speech infallibly proves two nations to have been originally one, and yet they differ from one another in physical characteristics to such an extent as to be now classified in different races, these characteristics must thereby be proved liable to change, for one of the nations must have lost its original type. Now I think it can be proved that the boundaries of the two-fold classification of men, according to language, and according to form and feature, no longer coincide; and as they must have once run together, and as that of language has remained unvaried, we must conclude that the other has undergone a change. Nay, I think we shall be able to go even further; for while no in-

stance has yet been brought, nor ever will nor can be, of any people, either by gradual transition, or by voluntary impulse, transferring its language from one family to another, we may perhaps surprise nature in her other order of classification, at the moment of effecting a transition from one family to another, by discovering examples of an intermediate state between any two, or of the processes whereby it has sometimes been produced.

In treating of the affinity of languages, I pointed out a remarkable connection, solidly demonstrated, between Hungarian and the languages of northern Europe, the Finnish, Lapponian, and Esthonian; and an inspection of the ethnographic map will show you how it is placed, like what geologists call outlines of peculiar strata, as a mass detached from the group to which it really belongs. But this relationship is still more extensive, and includes the Tchermisses, Votiaks, Ostiaks, more properly called As-jachs, and Permians, tribes now inhabiting the banks of the Oby, or even more eastern parts of Siberia.* But while no one doubts that all these tribes compose only one family, their physical traits are singularly distinct. They are all, indeed, remarkable for very low stature; but while several of these Uralian or Tschudish tribes, as the Laplanders, Tchermisses, Woguls, and Hungarians, have black hair and brown

* These languages from the Uralian family, in Balbi's ethnography, "Atlas Ethnogr." No. xv. See the ethnographic chart prefixed to this work.

eyes, others, as the Finns, Permians, and As-jachs, have all, according to Dobrowsky, red hair and blue eyes.* And this, too, appears worthy of observation, that as all these tribes belong to Blumenbach's Mongul family, so do we find the characteristics of this less plainly marked as we recede from its great seat, and those of the Germanic branch of the Caucasian family become prevalent as we approach its geographical centre. Here, then, assuredly, one portion or the other of the family must have varied from its primitive type, so as to overstep, to a certain degree, the boundary of the race to which it may be supposed to have belonged.

Another change may be, perhaps, traced in the same family. You doubtless remember that, at our last meeting, I entered into rather a detailed explanation of the relation in which the Tartars and Monguls stand to each other, and I observed that the best and most modern writers on the classification of languages, Abel-Rémusat, Balbi, Klaproth, and Pallas, place the two languages in the same family. I observed, also, that their own traditions represent them as descended from two brothers, and that in the eleventh century they formed two of a community of four cognate tribes. All this would surely seem to indicate a common origin, as far as it is traceable by historical, traditionary, and philological arguments. And yet it cannot be doubted but that the extremes of the two na-

* Prichard, vol. ii. p. 266.

tions, or families, are as dissimilar as possible, and that the Tartars belong to the Caucasian race.* It has been sometimes said that the Turks owe their fine forms and heads to their great mixture of Circassian blood, introduced by their captive wives from that country. But this theory, which has been applied to other similar cases, can hardly be supported, if we consider that such an infusion of foreign blood could never reach the great mass of the nation, but must be confined to the rich, who alone could well be subject to the operation of its cause. I will show you later, that ages and ages of intermarriages have not been able to obliterate the characteristic traits of the two nations anciently occupying Italy. But, besides this, we may observe that the Osmanlis or Turks presented the same features before the luxurious reason assigned could well have been in very active operation.†

But further, I before observed that some Tartar tribes, as the Kirghis, approach so nearly to the Mongul type, as to form a sort of intermediate step between them. This, again, Dr. Prichard attrib-

* See p. 169.

† At least if we suppose the custom to have begun only after the consolidation of Turkish power. An old historian thus describes Mahomed the Great, first emperor of the Turks: "His complexion was Tartar-like, sallow and melancholy, as were most of his predecessors, the Othoman kings; his looke and countenance sterne, with his eyes piercing, hollow, and a little sunk into his head; and his nose so high and crooked, that it almost touched his upper lip."—Knolles, "History of the Turks," 5th edit. p. 433.

utes to intermarriages; but it would, I think, be difficult to establish the existence of this cause.

In Blumenbach's collection of skulls we have one of a Yakut Tartar, which has all the characters of the Mongul race.* This may be only an individual case, but Dobell seems to allow that this tribe of Tartars approximate somewhat to the Monguls, for he observes: "There are credible proofs to adduce of their being descended from the Monguls, but their most probable origin is Tartar. . . . . A Yakut's features, and the expression of his countenance, partake more of the Tartar than of the Mongul race."†

The race to which we belong presents a similar phenomenon. Whatever hypothesis we may choose to adopt, the prevalence of a language essentially the same from India to Iceland proves the intermediate nations to be of common origin. Yet the inhabitants of the Indian peninsula differ from us in color and shape, so materially as to be classified in another race. Klaproth, to account for this circumstance, imagines that the Indo-Germanic nations were saved from the Deluge on two chains of mountains, the Himalaya and the Caucasus. From the former, according to him, descended the Indians to the south, and the Goths to the north; from the other came the Medes, Persians, and Pe-

* Decad. i. Cranior." pl. xv. p. 10.

† "Travels in Kamstchatka and Siberia:" *Lond.* 1830 vol. ii. pp. 13, 14.

lasgians. He then supposes the dark complexion of the Hindoos to have been produced by intermixture with a dusky race, who were there before them, having been saved from the same scourge upon the mountains of Malabar.* But all this is pure conjecture, without the slightest foundation either in history or in local tradition; and has been devised simply to escape from the difficulty, which is more easily met by allowing that a nation may change its characteristics, so as to pass into a different family from what its language proves was its original stock.

These examples will, however, by no means satisfy you that the two extremes, the black and the white race, can ever have been one: for the red or tawny cannot be considered an intermediate step, and we must look for examples of direct transition from one extreme to the other: and this assuredly is the hardest knot we have to untie in this inquiry. I will not speak of the great discussions held by many authors as to the original color of the human race; many, as Labat, considering it to have been red;† either because the name of the first

* "In Indien hat sich derselbe ganz mit früheren dunkelfarbigen Bewohnern vermischt, und seine Sprache herschend gemacht, dabei aber seine charakteristischen physischen Kennzeichen eingebüsst. Die brauen oder negerartigen Urbewohner von Indien retteten sich wahrscheinlich, zur Zeit der Noahischen Fluth, auf die hohen Gebirgen von Malabar, und den Ghauts."—Asia Polygl. p. 43.

† See Labat, "Nouvelle Relation de l'Afrique:" *Paris*, 1728, tom. ii. p. 257.

man signifies, in Hebrew, that color, or, as Bishop Heber conjectures, because undomesticated animals tend towards it.* Blumenbach supposes the original color was white; and if I might venture to give an argument in favor of this opinion, I should say that every departure from this hue bears the mark of an excess, or of a morbid affection. Alpinus has proved that the seat of the negro's color is not in the outward skin, which is in him as colorless as in us, but in the fine tissue situated under it, and known in anatomy by the name of the tissue or net of Malpighi.† This tissue in the black is the seat of a dark pigment, and in the albino is said to be filled with cysts or small bags, containing a white substance which gives their peculiar color: though Buzzi, in his account of the examination of an albino after death, says he could find no trace of the tissue at all.‡ It would appear, therefore, that the white, placed between two contrary deviations, should be the natural or normal state.

The ancients took the simple expedient of attributing the negro's color to the action of the sun. That climate taken in reference to its progressive degrees of heat, has an influence on the tint of the skin, is so far true, that we see a certain ratio exist between the two. Generally speaking, the whitest races

* *Ubi sup.* vol. i. p. 69.

† "De Sede et Causa Coloris Æthiopum:" *Leyd.* 1738.

‡ "Opere Scelte:" *Milan*, 1784, tom. vii. p. 11.

are nearer the pole, and the darkest are more under the influence of tropical heat: and between these two extremes we may trace many intermediate steps, as from the Dane to the Frenchman; after whom may come the Spaniard or Italian, then the Moor, and so the negro.* But this endeavor to establish a chain of gradation in color has to encounter two serious difficulties. First, in all these degrees, the tint is too evidently the result of an outward action upon the skin, the effects whereof can be moderated or suspended by precautions against heat. The Moorish females who keep the house, are almost perfectly white; but the negro child begins to become black when ten days old, however it may be sheltered from the heat; the action therefore in the first case is merely from without, while in the other it consists in the development of some internal principle. Secondly, directly opposed to this theory of considering different degrees of darkness a series of transitions from the white to the black, are the startling facts that the same race preserves its hue without sensible variation under the most distant latitudes, and that under the same latitude the most singular varieties occur apparently in the same race. Of the first, the Americans afford a most singular example. Whether on the frozen banks of the

* Such seems to be the opinion maintained by Dr. Hunter: "Disputatio inauguralis quædam de hominum varietatibus et harum causis exponens:" *Edinb.* 1775, p. 26.

Canadian lakes, or on the burning Pampas of the southern peninsula, hardly a shade of difference can be discovered in the complexion of the native Indians: the same copper color distinguishes all the tribes. Of the second we have a no less striking exemplification in the east.

"The great difference in color between different natives," says Bishop Heber, describing his first arrival at Calcutta, "struck me much; of the crowd by whom we were surrounded, some were black as negroes, others merely copper-colored, and others little darker than the Tunisians whom I have seen at Liverpool. Mr. Mill, the principal of Bishop's College, who had come down to meet me, and who has seen more of India than most men, tells me that he cannot account for this difference, which is general throughout the country, and everywhere striking. It is not merely the difference of exposure, since this variety of tint is visible in the fishermen, who are all naked alike. Nor does it depend on caste, since very high caste Brahmins are sometimes black, while Pariahs are comparatively white."* This last observation, if it can be completely depended upon, is of great importance. For, as we shall see on a future occasion, Heeren and others, guided by the division into castes, have imagined that India was peopled by two distinct nations, one of whom having conquered the other, reduced it to a state of inferiority and dependence;

* Vol. i. p. 9.

which hypothesis would be completely demonstrated, if a difference of complexion were distinguishable between the high and low castes.

Thus far, you see, I have only thrown doubts on the processes imagined to explain the black color of the negro: for though I think it depends upon climate, certainly no theory has been yet discovered to account for its origin. Our science is yet young, and we must content ourselves with collecting facts and drawing their natural inferences. It is therefore to these we must appeal; and they will suffice to prove that such a change may have taken place, though whether by accident or gradual deviation, we know not. I will submit such as I have noticed to your consideration.

The natives of Abyssinia are perfectly black, and yet certainly belong by origin to the Semitic family, and, consequently, to a white race. Their language is but a dialect of that class, and its very name intimates its having come across the Red Sea. Hence, in Scripture, the term *Cush* applies equally to them and to the inhabitants of the other side; and neither in features, nor in the form of the skull, do they any way resemble the negro. You may easily satisfy yourselves, either from portraits or from living individuals, that, save in color, their faces are perfectly European. Here, then, a change has taken place, though we know not how.

Another and more striking example we have in the intelligent and accurate traveller, Burckhardt. The town of Souakin, situated on the African coast

of the Red Sea, lower down than Mecca, contains a mixed population, formed, first of Bedouins or Arabs, including the descendants of the ancient Turks, and secondly of the townspeople, who are either Arabs from the opposite coast, or Turks of modern origin.* The following is his account of the two classes. Of the first he says: "The Hadherebe or Bedouins of Souakin have exactly the same features, language, and dress, as the Nubian Bedouins. In general they have handsome and expressive features, with thin and very short beards. Their color is of the darkest brown, approaching to black; but they have nothing of the negro character of countenance."† The others, who are descended entirely from settlers from Mosul, Hadramout, etc., and from Turks sent thither by Selim, upon his conquest of Egypt, have undergone the same change. "The present race," says Burckhardt, "have the African features and manners, and are in no way to be distinguished from the Hadherebe."‡ Here then we have two distinct nations, Arabs and Turks, in the course of a few centuries, becoming black in Africa, though originally white.

Captain Tuckey, speaking of the natives of Congo, says that they "are evidently a mixed na-

* "Travels in Nubia," 2nd edit. p. 391.

† Page 395.

‡ Page 391. As the Hadherebe have not, according to the first quotation, the negro countenance, I suppose by features we must understand only color.

tion, having no national physiognomy, and many of them perfectly south European in their features. This, one would naturally conjecture, arises from the Portuguese having intermarried with them, and yet there are very few mulattoes among them."* This observation completely overthrows that conjecture, even if admissible on other grounds; for an entire nation's physiognomy could never have been entirely changed by a few settlers. In the general observations on Captain Tuckey's voyage, collected from the scientific men and officers who accompanied him, we are informed that "their features, though nearest to those of the negro tribe, are neither so strongly marked nor so black as the Africans in general. They are not only represented as being more pleasing, but also as wearing the appearance of great simplicity and innocence."†

There are many nations, not only along the coast, but in the very heart of central Africa, who are perfectly of a glossy black without a sign of negro features. Among them are the Foulahs, whom Park describes as "not black, but of a tawny color, which is lighter and yellower in some states than in others. They have small features, soft silky hair, without either the thick lips or crisp wool which are common to other tribes."‡ Jobson describes them as "of a tawny color, with long

* "Narrative of an Expedition to explore the River Zaire:" *Lond.* 1818, p. 193.

† *Ibid.* p. 374.

‡ Sumner's "Records of Creation:" 2nd edit. vol. i. p. 380.

black hair, not near so much frizzled as that of the negroes."* Of the Yoloffs Mr. Moore writes, "that they are much blacker and handsomer than either the Mandingoes or Flups, not having the broad noses and thick lips peculiar to those nations, and that none of the inhabitants of those countries come up to the Yoloffs for blackness of skin and beauty of features." The writer from whom I quote adds, that travellers do not always distinguish the Yoloffs, with the same accuracy as Mr. Moore, from the Mandingoes and other flat-nosed blacks among whom they are mixed; and, in another place, describing the Mandingoes, he says, "that they are as remarkable for thick lips and flat noses as the Yoloffs and Foulahs are for handsome features."† Now this is quite contrary to the account given by later travellers; for Caillié thus describes the inhabitants of Timbuctoo:— "They are of the ordinary size, well made, upright, and walk with a firm step. Their color is of a fine deep black; their noses are a little more aquiline than those of the Mandingoes, and, like them, they have thin lips and dark eyes."‡ This contradiction is, however, of small moment: for any way, it is evident that the black color has no necessary connection with the negro feature, but that two races or varieties exist, equally black, but belonging, by

* "New General Collection of Voyages," *ut sup.* p. 262.

† *Ibid.* pp. 255, 266.

‡ "Travels through Central Africa." *Lond.* 1830, vol. ii p. 61.

the more important characteristic of the shape of the skull and features, to different families. Blumenbach has, indeed, remarked in vague terms the existence of these two classes in Africa, the one negro in every respect, the other black, but with handsome and perfectly European features; but he calls them all indiscriminately Ethiopians, and has made no provision for a distinct classification.*

This difference will perhaps appear more remarkable, if I am correct in another observation. I think we shall in general find that those tribes which are described as not having the negro features, but only the black color, are raised a degree in civilization above their neighbors, and profess some religion claiming a revelation,—as the Abyssinians a very corrupt Christianity, the natives of Congo some remnants of it, and all others the Mohammedan religion; whereas, those that have the negro characteristics to their fullest extent, as the Dahometans, Caffres, or Hottentots, are in the lowest state of moral and physical degradation, and profess some miserable system of fetichism or idolatry. Now, if craniology have any foundation—and even its warmest opponents must, I think, allow regarding it Bossuet's axiom, that "every error is a truth abused,"—the depression of forehead, and compression of temples, which is the negro distinctive in Blumenbach's system, would be precisely indicative of that degraded condition. And

* "Decas Cran." i. p. 23.

thus we should have two distinct causes: features would depend upon civilization, and color mainly upon climate.

For, regarding the influence of the latter, this extraordinary circumstance, that *every* nation, however various, that is found in the torrid climate of Africa—taking climate in its widest sense, as including the character of the tracts inhabited—should have put on the sun's dusky livery, seems to warrant the conclusion that this characteristic is attributable to the region which they all inhabit. The effect may not proceed from the direct outward action of the sun's rays; but, as it has been proved by Le Cat, Camper, and Lawrence,* that the skin of the fairest European may, under certain circumstances, became as black as a negro's over the whole, or a great part, of the body, so may we suppose that the principle which causes this change, and which is evidently inherent in the white, may, under the influence of peculiar climate, be brought into activity, and rendered perpetual by descent.

And, before leaving the soil of Africa, I will give an example of what may be, perhaps, considered a state of transition. Burckhardt has described the savage population of Mahass, as having characteristics intermediate between those of the negroes

* Le Cat, "Traité de la Couleur de la Peau humaine," *Amst.* p. 130; Camper, "Dissertat. physique," p. 16; Lawrence "Lectures on Physiology, etc." p. 522. It is a phenomenon observed mostly in females during gestation.

and the Nubians:—"In color they are perfectly black, their lips are like those of the negro, but not the nose or cheek-bone."*

Opposed to these facts, others may indeed be brought, which are often popularly cited. It is observed that the descendants of French, English, and Portuguese settlers on the coast of Africa have remained unchanged after many generations, while the negroes in North America, after several centuries, are still negroes.† And, to add a new example, Burckhardt twice mentions the descendants of Bosnian soldiers, left by Selim in Nubia, who yet retain the features, though they have forgotten the language, of their native country.

Much of this, or all, may be true; but what does it prove, when placed by the side of the facts I have quoted? Why, only, that the operation of causes is yet unknown to us; that we cannot discover the law whereby nature acts; that there are two series of facts, each true, but neither confuting the other. I wish only to show that the observation of modern philosophers tends to demonstrate that such a change *may* have taken place, not that it *must* take place. One instance is sufficient to prove the first assertion, whereas it might require some thousands to demonstrate the second.

But let us enter more minutely into the objection. We are credibly informed that in some

* *Ubi sup.* p. 53.

† "Description de la Nigritie," *ut sup.* p. 56. Labat, tom. ii. p. 255.

parts of India the descendants of Europeans long ago settled there have totally changed their color, though, of course, not their features. "It is remarkable, however, to observe," says an author whom I have already often quoted, "how surely all these classes of men" (Persians, Greeks, Tartars, Turks, and Arabs) "in a few generations, even without any intermarriage with the Hindoos, assume the deep olive tint, little less dark than the negro, which seems natural to the climate. The Portuguese natives form unions among themselves alone, or, if they can, with Europeans. Yet the Portuguese have, during a three hundred years' residence in India, become as black as Caffres. Surely this goes far to disprove the assertion which is sometimes made, that climate alone is insufficient to account for the difference between the negro and the European. It is true that in the negro are other peculiarities, which the Indians have not, and to which the Portuguese colonist shows no system [*symptom?*] of approximation. . . . . But, if heat produces one change, other peculiarities of climate may produce other and additional changes; and when such peculiarities have three or four thousand years to operate in, it is not easy to fix any limits to their power."* This reasoning is indeed defective, inasmuch as the negro features were fixed as early as the days of Herodotus or Homer, or even much earlier, as appears from Egyptian monuments; and

* Heber's "Narrative," vol. i. p. 68.

climate will not account for the cases I have given of tribes under the same latitude, and on the same soil, having totally different characteristics. But still the fact contained in this passage is valuable, as it shows that transition may take place from the white to the black color.

In like manner, Long, in his *History of Jamaica*, and Edwards, in his *History of the West Indies*, have both remarked that the skulls of the white settlers in those countries differ sensibly in shape from those of Europe, and approach to the original American configuration. Dr. Prichard likewise asserts, upon good authority, that the third generation of those slaves in the United States who live in houses, have little left of the depressed nose, and that their mouth and lips become more moderate; while their hair grows longer at each succeeding generation. The field slaves, on the contrary, retain much longer their original form.* Caldani has given an instance of a black shoemaker, who, having been brought very young to Venice, had so far changed his color as to be no darker than a European affected with a slight jaundice; and in this case he speaks from personal observation.†

The important remark I just quoted from Dr. Prichard is highly interesting; and will, I doubt not, be much further confirmed by accurate obser-

* Vol. ii. p. 365.

† "Institutiones Physiologicæ, auctore L. M. Caldanio." *Ven.* 1786, p. 151.

vation. It brings me back to the consideration of the influence exercised by civilization upon the characteristics of a race. Cuvier has noticed that servitude or domestication is the most powerful agent yet discovered for producing modifications in animals, and the greatest variety yet obtained was produced by its means.* Civilization comes nearest to this agent in man, and must be even stronger, from its moral influence. There is no doubt but the mode of life, the food and comforts, and the degree of mental culture enjoyed, produce a strong and permanent effect on different nations. A late traveller in Syria has noted the great difference observable between the Bedouins and the Fellahs of the Hauran. The first, or wandering Arabs, ever exposed to hardships and the fatigues of a roaming active life, are slightly-shaped and have a small face and thin beard. The latter, or sedentary Arabs, are stout and large, have a strong beard, but want the keen looks of their brethren of the desert. Yet there can be no question but that these two classes are in reality only one nation, speaking the same language, and inhabiting the same climate. What, then, causes the difference between them? No doubt their different modes of life: for this accurate observer adds, that till the age of sixteen no difference can be perceived be-

* In his "Discours préliminaire." See likewise Blumenbach, in his chapter entitled "Ausartung des vollkommensten aller Hausthiere, des Menschen," in his "Beyträge zur Naturgeschichte," i. Th. *Götting.* 1790, p. 47.

tween them.* In another work he says that equal difference is to be seen in their dispositions.†

Mr. Jackson notes the same difference between the Arabs who inhabit towns in Morocco, and the Bedouins who dwell in tents. "The Selluks of Haha," says he, "are physiognomically distinguishable from the Arabs of the plains, and even from the Selluks of Susa, though in their language, manners, and mode of living they resemble the latter."‡ Nay, even among the Bedouins themselves, Volney has observed that a marked difference is discernible between the people and their sheikhs or princes, who, being better fed, are taller, stouter, and better-favored than their poorer subjects, who subsist on six ounces of food a day. Foster has remarked a similar distinction in Tahiti. "The common people," says he, "who are most exposed to the air and sun, exert their strength in agriculture, fishing, paddling, building houses and canoes, and are stinted in their food, are blacker, their hair more woolly and crisp, their bodies low and slender. But their chiefs and arees have a very different appearance. The color of

* Burckhardt's "Travels in Syria." Not having at hand the English edition, I translate from the German version · *Weimar*, 1823, i. Th. p. 456.

† "Notes on the Bedouins and Wahabees:" *Lond.* 1830 p. 104.

‡ "An Account of the Empire of Morocco:" *Lond.* 1811 p. 18.

§ "Voyage en Egypte et en Syrie:" *Par.* 1787, tom. i p. 359.

their skins is less tawny than that of the Spaniard, and not so coppery as that of an American; it is of a lighter tint than the fairest complexion of an inhabitant of the East-India Islands. From this complexion we find all the intermediate hues, down to a lively brown, bordering upon black. A few have yellowish, brown, or sandy hair."* Kotzebue, and other later navigators, have made the same observation; but it seems clear that the Yeris, or noble race of the Sandwich and other Polynesian islands, are really a distinct tribe from the common people.†

Both Pallas and Klaproth have expressed an opinion that the Mongul complexion seems to depend much upon the habits of that race. The children and women are remarkably white; smoke and exposure to the sun give the men their yellow tint.‡ Though much might be urged against this hypothesis it may serve to draw more attention to the bearing which habits and civilization may have upon the characteristics of different races. With the same view I would notice the remarkable alteration which has occurred in the Germanic family. For we have seen that its traits were once so marked that it was made to constitute one of the great and

* "Observations made during a Voyage round the World:" *Lond.* 1778, p. 229. See also the son's "Voyage round the World." 1777, vol. i. p. 305.

† Kotzebue's "New Voyage round the World:" *Lond.* 1830, vol. i. p. 58.

‡ Pallas, *ubi sup.* Klaproth, "Voyage au Caucase," tom. i. p. 73.

most strongly-characterized divisions of the human species, forming, to the eye of the Greek, a perfect contrast with the swarthy hue of the Ethiopian. Yet these distinctives, if not totally effaced, are now become so faint as to be hardly traceable; doubtless through the influence of civilization, and the assimilation of that nation's manners to those of others belonging to the same family.

Perhaps the most extraordinary illustration of the permanent influence of habits upon the different races may be drawn from the teeth. Blumenbach has observed that the teeth of man show him manifestly to be an omnivorous animal. But in some nations, probably from the use of food requiring great mastication, the incisors become blunt and rounded, and the canine teeth are undistinguishable from the grinders. This is the case with many, perhaps most, Egyptian mummies, and with the Greenlanders and Esquimaux, who eat their meat uncooked, with most extraordinary contortions of jaw.*

These examples may suffice, instead of many, to show what an important element difference of habit is; for nature, always tending to adapt her laws to particular circumstances, where the general harmony will not be disturbed, seems after a time to perpetuate varieties produced by this accidental cause.

There are many other physiological observations and objections connected with the unity of origin

* "De Generis Humani Varietate," pp. 27, 224.

in the negro and white races, which I pass over, as they are hardly of a nature to be interesting to you.* I will therefore at once proceed to sum up

* I will simply mention in a note one argument, both as a sample of the strange expedients to which recourse has been had by writers on these subjects, and because I am not aware that any one has taken the trouble to answer it. I allude to Virey's objection to unity of race, drawn from Fabricius's accurate observations on the *pediculus nigritarum*, as the parasite insect of the negro has been scientifically called, as specifically distinct from all others; so that, according to him, the black race which it accompanies must have been also distinct from the beginning (tom. i. p. 391). In reply to this, I will content myself with saying, that there are other instances of a parallel nature where we cannot account for the existence of the smaller tribes of animals before their present seats and nourishment existed. For instance, the *tinea*, or moth, which attacks dressed wool, never touches it when it is unwashed; where did it exist before wool was washed and combed? Are we to consider washed and unwashed wool two different species, because the same animal will not live in both? The larva of the *oinopota cellaris* will live nowhere but in wine or beer; another insect described by Reaumur now disdains all food but chocolate. (See Kirby and Spence's "Introd. to Entomology," 4th edit. vol. i. pp. 384, 388.) How or where did these little creatures live, before what is now their exclusive nourishment was manufactured? for no one will suppose that these substances were ever found ready-made by the hand of nature. These cases are exactly parallel to the one objected; but there is an instance perfectly similar, of an insect which produces disease in tame swine, but is never found in the wild, though acknowledged to be the original stock. "Der Finnenwurm in Schweinfleisch," says Blumenbach, "ist, in seiner Art, ein eben so vollkommenes Thier als der Mensch. Nun aber findet sich, so viel bekannt, dieses Thier blos beym zahmen Hausschwein, und niemahlen hingegen bey der wilden Sau, von der doch jener

the results of this study as briefly as possible. I have endeavored to connect and lay before you what I think may be considered its admitted results, imperfect as it yet remains. We have seen it well established: first, that among animals acknowledged to be of one species, there have arisen varieties similar to those in the human race, and not less diverse from one another. Secondly, that nature tends, in the human species, to produce varieties in one race approaching to the characteristics of the others. Thirdly, that sporadic varieties, of the most extraordinary sort, may be propagated by descent. Fourthly, that we can find sufficient proofs in the languages and the characteristics of larger bodies, or entire nations compared, of their transition from one race to another. Fifthly, that though the origin of the black race is yet involved in mystery, yet are there sufficient facts collected to prove the possibility of its having arisen from another, particularly if, in addition to the action of heat, we admit that of moral causes acting upon the physical organization.

And here I will remark that we are often precipitate and unjust, in judging of the past by causes now in action. It is indeed true that nature is constant and regular in her operations; but, if in the

abstammt." (Beyträge zur Naturgeschichte, i. Th. p. 30.) See also some curious remarks on this subject by Tilesius, in the "Mémoires de l'Académie de St. Pétersbourg," tom. v. 1815, p. 402.

short course of our experience, or that of past observers, no variation may have been noted in the uniformity of her workings, it is that the little segment of her duration's cycle over which we and they have travelled, is but as a straight line, an infinitesimal element, whose curvature can only appear, when referred to a much larger portion of her circumference. That besides the partial laws with which we are acquainted, there have been others once most active, whose agency is now either suspended or concealed, the study of the world must easily convince us. There were times within the verge of mythological history when volcanos raged in almost every chain of mountains; when lakes dried up, or suddenly appeared, in many valleys; when seas burst over their boundaries and created new islands, or retired from their beds and increased old continents; when, in fine, there was a power of production and arrangement on a great, magnificent scale, when nature seemed employed not merely in the yearly renovation of plants and insects, but in the procreation from age to age of the vaster and more massive elements of her sphere; when her task was not confined to the embroidering the meadows in spring, or to the paring away of shores by the slow-eating action of tides and currents, but when she toiled in the great laboratories of the earth, upheaving mountains and displacing seas, and thus giving to the world its great indelible features. And how are we to account for this, but by supposing in nature a two-fold action, one regular

from the beginning, and uniform to the end, the other a mysterious slow-moving power, which, though revolving on the same plane, travels over it with an imperceptible motion, proportioned to the wants of the entire system? And in other cases, and on a smaller scale, such should seem to be the course of nature. In the child, the circulation of the blood, the absorbing and digestive operations, all the functions of life, are the same as in the man; with variations only as to degree of activity, they commence with being, and are regular through its duration. But in its earlier stages there is, besides, a plastic virtue at work within us traceable to no law of necessity, having no clear dependence on the general course of the ordinary vital powers, which gives growth and solidity to the limbs, characteristic shape to the features, gradual development and strength to the muscles; then to all appearance sinks into inertness and ceases to act, till age seems once more to call the extraordinary laws into activity, to efface the impression, and undo the work of their earlier operations. And, in like manner, we must allow that in the world's infancy, besides the regular ordinances of constant and daily course, causes necessary to produce great and permanent effects may have had a power, now no longer wanted, and consequently no longer exercised; that there was a tendency to stamp more marked features upon the earth and its inhabitants, to produce countries as well as their vegetation, races as much as individuals.

There are instances certainly as yet discoverable, of a two-fold action of one cause, upon a smaller and a greater scale. An epidemic disease, for instance, besides its particular action upon individuals, runs a similar course, only referable to large communities or aggregations of men, or even to the entire human race: is first slight in its public infliction, then increases, and so by contrary gradations yields to nature or art, and wears itself away; even in such sort, that, at the period or crisis of greater fatality, the lot of each patient shall seem rather to depend upon some mysterious law, which connects him with the infected community, than upon the individual circumstances of his peculiar case. And, in a somewhat similar manner, we may say, that the daily and yearly courses of nature, which appear so identical throughout, are yet but components of a much longer period, at the end of which an action, now so small as to be invisible, will, by the aggregation of its effects, appear great and important, and seem to have been produced by laws, now hidden in the complex machinery of the universe.

And, to apply still further the illustration I before gave: when any part of the human system has been so far altered that the power which acted in its infancy again is needed, though apparently suspended, there are hidden resources which recall it into action; so that, when any portion of the bony structure has been removed, there is again wrought, to reproduce it, that marvellous weaving

which shoots its threads, like a crystallization, from point to point, and then stretches across it a firm and solid texture, just as occurred many years before in childhood. And just so do we see that when, by accidental circumstances, nature can be brought back to her primitive position, she resumes her primitive action, and renews the laws she had held suspended. The production of coral reefs, and, from them, islands, in the South Sea, which soon receive a population from distant points, shows us, in that last corner, to which she seems to have withdrawn her creative powers, how she once prepared new habitations for man; the incredible scale on which the inhabitants increase on such occasions, far beyond the calculations of modern statistics, proves what powerful energies she exerted when wanted to propagate the human race. An island first occupied by a few shipwrecked English in 1589, and discovered by a Dutch vessel in 1667, is said to have been found peopled, after eighty years, by 12,000 souls, all the descendants of four mothers.* Acosta, writing the natural history of New Spain, within a hundred years of its discovery, tells us that there were, even earlier, "men who had 70,000 or 100,000 sheep, and that, even then, were many who had as many; which in Europe would be considered great riches, but there, is only moderate wealth." And yet, not one of these animals existed in the country before

* Bullet, "Réponses critiques:" *Besanç.* 1819, vol. iii. p. 45.

its discovery, and the breed was propagated entirely from those imported by the Spaniards. The same is to be said of horned cattle; yet such was their increase, that, in his time, they went roaming in herds of thousands over the plains and mountains of Hispaniola, and were the property of whoever chose to hunt them down with houghing-knives (*desjarretoderas*), and cut them down; and so profitable was this chase, that, in 1585, the fleet brought over from that island 35,444 hides, and from New Spain 64,350; showing an increase quite beyond all ordinary calculation.*

Such examples, to which I might add many others, seem to show the existence of hidden resources in nature, never called forth, save in her infant state. And it surely cannot be unphilosophical to suppose that impressions, meant to be characteristic and permanent, were then more easily communicated, and more indelibly stamped. We need not, with Carové, have recourse to the hypothesis that the black color of the negro was the mark set upon Cain, and that it was continued after the Deluge in the family of Japhet, whom he supposes to have married into that stock.† The admission of such an hypothesis

* Acosta, "Historia natural y moral de las Indias:" *Barcelona*, 1591, fol. 180.

† "Kosmorama, eine Reihe von Studien zur Orientirung in Natur," etc., *Frankf.* 1851, p. 65. He does indeed suppose them to be of a mixed race, between the Sethites, represented by Shem, and the Cainites, continued in Japhet.

gains us but little, for we have still the color of the Americans and Malays to account for. But it is much more simple to allow that one individual, or one family, placed in favorable circumstances, may have given rise to peculiarities, which, in consequence of intermarriages, and the continued operation of the same circumstances, may have become enduring.

But we, too, indulge here in conjecture. I am willing to own it; for though sufficient has been said to prove that our science already can refute all solid objection to the unity of race in the human species, although the admitted facts which I have laid before you may show that there is no impossibility of one family having sprung up from the other, yet we must own that the methods whereby nature has proceeded are yet a mystery; so that the philosopher must be content with conjecture, and honestly confess:

Οὐκ οἶδ' ἀκριβῶς εἰκάσαι γε μὴν πάρα.*

Nor can such conjectures be refused as rash and unwarrantable, so long as the fact which they are directed to account for, is certain and incontestable.

And I will conclude the evidence upon this subject by once more recapitulating the connections of the different races, and the insensible shades whereby they seem to blend one into an other.

* Eurip. "Rhes." Act. ii. 280.

The white race, which of course I consider the central one, connects itself with the Mongul through the Finns and Asjachs, who have its complexion, hair, and iris; likewise through the Tartars, who insensibly pass through the Kirghis and Yakuts into the Mongul race: and thirdly, through the Hindoos, who communicate with us through the Sanscrit language. With the negro race it is connected through the Abyssinians, who have a Semitic language and European features, and through the Arabs of Suakin, who resemble the Noubas; then come the natives of Mahass, then the Foulahs and Mandingos, and so forward to the Congoese, the complete negroes, and the Hottentots. These last are again closely allied to the mountaineers of Madagascar; they to those of Cochin-China, the Moluccas, and Philippine Islands, in all which are a race of black woolly-headed mountaineers, differing in language from the other natives. These again join the New Hollanders, and the natives of New Caledonia and the New Hebrides, who are further connected by similarity of customs, religion, and partly by physical traits, with the New Zealanders, and other natives of Polynesia; and so in fading tints, till we almost return to the Asiatic families.

The population of these islands deserves a more particular attention. I have observed that through the innumerable islands of Polynesia there are two distinct tribes or families. Forster, in fact, proves this point incontestably. While

the inhabitants of Tahiti and New Zealand, the Marquesas, Friendly, and Society Islands, speak but dialects of the same language, as is proved by his comparative tables, those of the New Hebrides, especially Mallicollo, New Caledonia, and Tanna, speak barbarous dialects, quite distinct, and, to all appearance, unconnected. Their physical characteristics are likewise very different, approaching, as I have intimated, to the negroes of the more western islands. But what I wish principally to remark is, how the tribes belonging to the first race, the unity of which no one will deny, have varied, on one side, in form and complexion, to such an immense extent, and how those of the other have likewise departed so much from their original type, that the two have blended together, so as to be hardly distinguishable, excepting by their languages. "Each of the above two races," says Dr. Forster, "is again divided into several varieties, which form the gradations towards the other race: so that we find some of the first race almost as black and slender as some of the second; and in this second race are some strong athletic figures, which may almost vie with the first."* Thus, in the same race, while some are hardly distinguishable from a negro tribe, allied through inseparable links to the negroes of Africa, others de-

* "Observations, etc." p. 228. See the comparative table, p. 284. There are several important coincidences, however, between the dialects of the two families, as well as of both with Malay.

part so far from it as to approximate in symmetry of form in the body and skull, as well as in color, to the natives of Europe. And in these gradations we trace a corresponding scale of civilization. "The natives of some of the islands in the South Sea," says Mr. Lawrence, speaking of the form of the skull, "are hardly to be distinguished, in countenance and head, from Europeans." And again: "The inhabitants of these islands, from New Zealand on the west to Easter Island, contain a race of much better organization and qualities. In color and features, many of them approach to the Caucasian variety; while they are surpassed by none in symmetry, size, and strength.* Dr. Prichard reasons very forcibly upon this gradation within the race or family. "If," says he, "we view these races (the Papuan and Polynesian) together, they appear to furnish sufficient proof that the utmost physical diversities presented by the human frame in different nations may and do arise from a uniform stock. They enable us to produce actual facts, as examples of this deviation. We cannot indeed go back all the steps at once, but we can go the whole of the way by degrees. If a few of the fairest New Hollanders were separated from the community, and placed on an island by themselves, they would form a race of lighter color than the New Zealanders. Under favorable circumstances, would not this stock de-

* "Lectures on Physiology," pp. 382, 571.

viate into still lighter shades, as the race of New Zealand, or its kindred in the Society Isles, has done?"* I must not pass over the singular custom prevalent, not only throughout these islands, but among the Hottentots in Africa, the Guaranos of Paraguay, and the Californians in America—that of amputating the little finger of one or both hands, in token of mourning for the death of a relation,† a custom so singular that we can hardly conceive it to have sprung up spontaneously in such distant parts.

The existence of such gradations, almost from one extreme to the other, in the same race, is not peculiar to these tribes. The Malays exhibit a similar variety. "The complexion," says Mr. Crawfurd, "is generally brown, but varies a little in different tribes. Neither climate nor the habits of the people seem to have anything to do with it. The fairest races are generally towards the west, but some of them, as the Batteeks of Sumatra, upon the very Equator. The Javanese, who live most comfortably, are among the darkest people of the Archipelago; the wretched Dayaks, or cannibals of Borneo, among the fairest."‡ This difficulty of accounting for such diversities is rather favorable than opposed to the consequences we have been drawing; for, the fact being thus established, that in a race acknowledged to be one, such vari-

* Vol. i. p. 488.

† Forster (G.) "Voyage round the World," vol. i. p. 435.

‡ "History of the Indian Archipelago," vol. i. p. 19.

eties have sprung up, the difficulties of tracing them to a uniform cause, only show that there are agencies which we have not yet discovered, or a complication of causes whose elements we have not yet mixed in the prescribed proportions, so as to understand its action. And the more we extend the potency of nature, beyond our comprehension, the more easily we justify the production of inexplicable phenomena.

In the family to which we belong, the same series of modifications exists; we have therein varieties which, if not so strongly marked, appear just as indelible; yet no one would maintain that each sprung from an independent stock. The Jew is at this day perfectly distinguishable from the Europeans that surround him, though West and other eminent artists have found it impossible to characterize him by any particularly distinctive traits.* The Gipsies I may here otherwise mention as an instance of a tribe, which, proved by its language to be of Indian origin, has lost much of its original configuration, and particularly the olive color of its country, by living in other climates. But the Germanic tribes may yet be distinguished by feature from the Greeks, and these again from

> ——— "The Celtic race,
> Of different language, form, and face,
> A various race of man;"

as their own northern bard has somewhere called

* See Camper, "Dissert. physique," p. 21.

them. It is in vain for these subdivisions to blend by every civil and moral union; they will continue, like the united waters of the Rhone and Saone, to flow together in one stream, but with distinguishable currents.

Thus are even the smallest varieties once produced, never again obliterated; and yet not therefore are they marks of independent origin. Even families may transmit them, and the Imperial house of Hapsburg has its characteristic feature. And whence arises this indelibility, by natural processes, of varieties by natural processes introduced? This should seem to be one of the mysteries of nature, that we may on anything compel her to place her signet; but we know not how again to force it off. Man, like the magician's half-skilled scholar, so beautifully described by the German poet, possesses often the spell whereby to compel her to work, but has not yet learnt that which may oblige her to desist.

The country and city where we now are, suggests an application of what we have just discussed, to researches both useful and amusing. Dr. Edwards, in a French work, *On the Physiological Characters of the Human Races, considered in their relation to History*, has given a very interesting hint for the prosecution of this study.* He was struck, at some market in the south of France, by observing two distinct characters in the heads of the country people, each referable to an individ-

* Paris, 1829.

ual type; and he paid particular attention to the prevalence of either, in his tour through Italy, and everywhere observed the one to predominate over the other. The one he considered the Gaulish type, the other the Roman. As the model of the former he proposes the features of Dante, too well known to all my hearers to require any description. I am sure no one can pay attention to the countenance prevalent in different parts of Italy without noticing how often this form recurs in Tuscany and in Upper Italy, while in Rome and the southern provinces it is of very rare occurrence. He gives, however, no type of the Roman face and head. To find this, we must not allow ourselves to be led away by popular representations. There are some quarters of Rome where the descendants of the ancient inhabitants are supposed yet to remain; and travellers have often written that the countenance of the population beyond the Tiber exactly resembles that of the Roman soldiers upon the column of Trajan, and other ancient monuments.

Supposing these to be sufficiently distinct, or sufficiently well copied, to allow the making of such a comparison, I should say it was one of the worst criterions possible. For a slight acquaintance with Roman art will satisfy any one that, on historical monuments, where no portrait is intended, all the figures are formed upon the Grecian model, and can give no clue towards ascertaining the physiognomy of the ancient inhabitants. But look at the sarcophagi on which the busts of the

deceased are carved in relief, or raised from their reclining statues on the lid, or even examine the series of imperial busts in the Capitol, and you cannot fail to discover a striking type, essentially the same, from the wreathed image of Scipio's tomb, to Trajan or Vespasian; consisting in a large and flat head, a low and wide forehead, a face, in childhood, heavy and round, later, broad and square, a short and thick neck, and a stout and broad figure—a type totally at variance with what we find generally considered as the Roman countenance. Nor need we go far to find their descendants; they are to be met every day in the streets, principally among the burgesses or middle class, the most invariable portion of every population. The contrast between the true features of the Romans and their ideal type in art is nowhere, perhaps, so clearly observable as in the sculptures of Titus's arch. The various soldiers represented on each side are so exactly like one another that, were they not sculptured in stone, we might suppose them to have been all cast in one mould. The entire profile, particularly in the half-open mouth and lips, shows the existence of a rule or model, from which the artist might not depart. But with these the emperor in his chariot contrasts in the strongest manner: his whole shape is formed on another type; and though the features are quite effaced, sufficient remains of the outline to show the full heavy face and bulky head of a true Roman.

These remarks may lead us to a great caution, in judging of characteristic forms, from works belonging to the higher departments of art. No nation long possesses the art of representation, without forming to itself an ideal, abstractive type; and the caution to be used should, necessarily, be doubled where the arts and their types were borrowed. Even the Egyptians had their ideal beauty, as well as the Greeks; and Champollion, to the horror of pure classical artists, used to descant in raptures on the elegance of feature and form in some Egyptian statues. And he must have seemed right to those who would consider them as the perfection of those principles which guided the genius of one people, necessarily keeping within the national type of living forms, and led to one of the earliest manifestations of art. It was by not sufficiently attending to these considerations that Blumenbach, as I observed in my last lecture, imagined, that in Egypt there must have been different races of men; whereas, the solitary specimens he brings of various physiognomies, only seem to mark the difference between a ruder and more ideal period of style. On another occasion, he seems to fall into a similar error. The heads on the Athenian tetradrachmas have nothing in common, according to him, with works of the age of Pericles, and approach in features to the Egyptian model.* But if, on the other hand, we compare them with the

* "Specimen Historiæ naturalis antiquæ artis operibus illustratæ:" *Götting.* 1808, p. 11.

Ægina marbles,* we shall discover a striking similarity of character; they have all the leer, or laughing expression, so peculiar to those early works. Yet will no one suspect them of being anything but purely Grecian. Indeed, far as they are removed from the perfect works of a later period, they show how soon a uniform rule or model is introduced into art, and becomes its necessary principle. Cockerell has remarked that, in the Ægina marbles, "a canon of proportion, and a system of anatomical expression, are observable throughout:"† and Thiersch has approved of Wagner's observation, that though art in other respects improved, and every grace of form was introduced into that school, the countenances remained unchanged.‡ And so, in fact, not only in the school of Ægina, but in every other Grecian school, from the hasty etchings on the Grecian, or, as they are called, Etruscan, vases, to the sculptures of the Par-

* The collection of statues which adorned the Temple of Jupiter Panhellenius, in the island of Ægina; and which having been restored in a most masterly manner by Thorwaldsen, at Rome, form the principal ornament of the splendid Glyptotheca at Munich.

† In the "Journal of Science and the Arts," vol. vi. 1819, p. 338.

‡ "Von der Minerva an bis zum letzten der Krieger sehen sich alle ähnlich, und scheinen insgesammt leibliche Brüder und Schwestern zu seyn, ohne den geringsten Ausdruck von Leidenschaft. Zwischen Siegern und Besiegten, zwischen Gottheit und Menschheit, ist nicht der geringste Unterschied zu bermerken."—Ueber die Epochen der bildenden Kunst unter den Griechen, 2e Abhandlung: *Munich*, 1819, p. 59.

thenon, there is manifestly one rule or ideal principle of the beautiful, which never can be mistaken; and there can be no doubt but that the abstract form was derived from the national features, of which it may be considered the purified representation. And thus, in some respects, where art is indigenous and national, it may be indirectly of use towards representing to us, even in its heroic or mythological figures, the character of the people.

And, having wandered thus far, step by step, from the subject of our inquiry, allow me to proceed a little further in pursuit of a moral application which these remarks have suggested, and which may perchance lead us back once more unto our theme. As no nation or race of men could ever have gone out of their own physical characteristics for their type of ideal perfection, in the beauty of form; as the Egyptian never could, by any abstraction, have generated a style of art, in which the color, shape, and features, of his divinity should be purely European; nor the Greek have given to his hero the tawny hue, narrow eyes, and protruding lips of the Egyptian—for each to the other must have seemed deformity—so could neither they, nor the men of any other nation, have framed to themselves an ideal type or canon of moral perfection of character, which arose not from what, to them, seemed most beautiful and perfect. A Hindoo cannot conceive his Brahman saint other than as possessing in perfection the abstemiousness, the silence, the austerity, and the

minute exactness in every trifling duty, which he admires, in different degrees, in his living models. Plato's Socrates, the perfection of the philosophical character, is composed of elements perfectly Greek, being a compound of all those virtues which the doctrines of his school deemed necessary to adorn a sage.

Now this hath often appeared to me the strongest internal proof of a superior authority stamped upon the Gospel history, that the holy and perfect character it portrays not only differs from, but expressly opposes, every type of moral perfection which they who wrote it could possibly have conceived. We have, in the writings of the Rabbins, ample materials wherewith to construct the model of a perfect Jewish teacher; we have the sayings and the actions of Hillel and Gamaliel, and Rabbi Samuel, all perhaps in great part imaginary, but all bearing the impress of national ideas, all formed upon one rule of imaginary perfection. Yet nothing can be more widely apart than their thoughts, and principles, and actions, and character, and those of our Redeemer. Lovers of wrangling controversy, proposers of captious paradoxes, jealous upholders of their nation's exclusive privileges, zealous uncompromising sticklers for the least comma of the law, and most sophistical departers from its spirit, such mostly are these great men—the exact counterpart and reflection of those scribes and Pharisees who are so uncompromisingly reproved, as the very contradiction of Gospel principles.

How comes it that men, not even learned, contrived to represent a character every way departing from their national type—at variance with all those features which custom and education, and patriotism, and religion and nature, seemed to have consecrated as of all most beautiful? And the difficulty of considering such a character the invention of man, as some have impiously imagined, is still further increased by observing how writers, recording different facts, as St. Matthew and St. John, do lead us nevertheless, to the same representation and conception. Yet herein methinks we have a key to the solution of every difficulty. For if two artists were commanded to produce a form embodying their ideas of perfect beauty, and both exhibited figures equally shaped, upon types and models most different from all ever before seen in their country, and, at the same time, each perfectly resembling the other, I am sure such a fact, if recorded, would appear almost incredible, except on the supposition that both had copied the same original.

Such, then, must be the case here: the Evangelists, too, must have copied the living model which they represent, and the accordance of the moral features which they give him can only proceed from the accuracy with which they have respectively drawn them. But this only increases our mysterious wonder. For, assuredly, he was not as the rest of men, who could thus separate himself in character from whatever was held most perfect and

most admirable by all who surrounded him, and by all who had taught him; who, while he set himself far above all national ideas of moral perfection, yet borrowed nothing from Greek, or Indian, or Egyptian, or Roman; who, while he thus had nothing in common with any known standard of character, any established law of perfection, should seem to every one the type of his peculiarly beloved excellence.* And truly, when we see how he can have been followed by the Greek, though a founder of none among his sects,—revered by the Brahman, though preached unto him by men of the fisherman's caste,—worshipped by the red man of Canada, though belonging to the hated pale race, —we cannot but consider him as destined to break down all distinction of color and shape, and countenance, and habits; to form in himself the type of unity, to which are referable all the sons of Adam, and give us, in the possibility of this moral convergence, the strongest proof that the human species, however varied, is essentially one.

* *Διάφοροι δὲ φύσεις βροτῶν*
Διάφοροι δὲ τρόποις· ὁ δ' ὀρθὸς
Ἔσθλὸν σαφὲς αἰεί.—Euripid. Iphigen. 559.

LECTURE THE FIFTH;

ON

THE NATURAL SCIENCES.

PART I.

CONNECTION of the Natural Sciences with the preceding topics.—MEDICINE.—Applied in Germany to the denial of our Saviour's resurrection.—General remarks upon the utility of discussing such objections.—The reality of our Redeemer's death, and consequently the truth of his resurrection, vindicated by physicians, upon medical grounds: Richter, Eschenbach, the Gruners.—Translation of an Arabic narrative of a crucifixion.

GEOLOGY.—Classification of systems.—*First*, Systems professedly framed to defend Scripture.—Older theories of the earth: Penn, Fairholme, Croly.—Defects of such systems.—*Secondly*, Systems opposed to Scripture: Buffon, and other French writers.—*Thirdly*, Purely scientific researches.—Example of objection from a particular case; Brydone on the lavas of Jaci Reale: confuted by the observations of Smyth, Dolomieu, and Hamilton.—Points of contact between Geology and the Sacred Narrative. The *Creation*.—Pre-existence of a chaotic state; doctrine of successive revolutions: found in all ancient cosmogonies, and in the Fathers of the Church.—Fossils; early speculations regarding their origin: Cuvier's discoveries.—Constancy and regularity of the cause employed in such revolutions.—Elie de Beaumont's theory of the elevation of mountains: its accordance with Scripture.—Theory of

the days of creation being periods.—Opinions of modern foreign geologists on the harmony between the Mosaic creation and geological observations.

"In all pursuits," says the amiable philosopher Fronto, "I think it better to be wholly ignorant and unskilled, than half-learned and half-expert. Philosophy, too, they say, it is better never to have touched, than to have but partially tasted; inasmuch as those become most malicious who, pausing in the porch of science, turn away without proceeding further." * Nothing has proved the accuracy of these observations so well as the connection between the natural sciences and revealed religion. It has been the malice of superficial men, who had not patience or courage to penetrate into the sanctuary of nature, that has suggested objections, from her laws, against truths revealed. Had they boldly advanced, they would have discovered, as in the cavern-temples of India and Idumea, that the depths which serve to conceal her darkest mysteries may the soonest be changed into fittest places for profound adoration.

The natural sciences, of which we have now to treat, are usually connected with religion by form-

* "Omnium artium, ut ego arbitror, imperitum et indoctum esse præstat quam semiperitum et semidoctum. Philosophiæ quoque disciplinas aiunt satius esse nunquam attigisse quam leviter et primoribus ut dicitur labiis delibasse; eosque provenire malitiosissimos, qui in vestibulo artis obversati, prius inde averterint quam intraverint."—Ad M. Caes. lib iv. ep. 3. *Romæ*, 1823, p. 94.

ing the basis of what is called "natural theology," that is, by giving strong demonstration of the goodness and wisdom of God, in the works of creation, and thus showing the existence of a regulating providence in the construction and direction of the universe. The very character of the course of lectures which I have undertaken to deliver, forbids me to enter upon the consideration of this connection: and, even if want of abundant materials for my definite undertaking had inclined me to wander into this ground, I should have felt myself deterred by the detailed and interesting, as well as learned and able, manner in which that branch of religious science has of late been treated in the Bridgewater publications. If, therefore, we confine ourselves, according to our engagement, to the connection between science and *revealed* religion, we shall find that the study of which I last discoursed may appear very naturally to lead us into the consideration of the alliance, if any exists, between philosophical pursuits and the facts communicated in the inspired pages. For we may truly say, that in attempting to establish the unity of the human race, we found ourselves involved in a variety of physiological speculations, and had to unravel the action of natural causes upon the physical organization of man. This would seem to conduct us into the department of medicine; and however strange it may appear to you, it is through this study that I mean to lead you into the natural sciences.

You will probably ask, what light the progress of medicine can throw upon the truths of religion. Not much, perhaps, if we consider it as an aggregate of principles, varying in different schools, as a succession of theories, most conflicting among themselves, and not often referred to any illustration of sacred doctrines. But, in particular cases, in the examination of individual facts, where science has been first invoked by the adversaries of revelation, a fuller and more learned discussion, based exclusively upon scientific principles, has done the work of confutation much more effectually, and much more satisfactorily, than mere theology could have achieved it. I will select one example, in which superficial medical observation has been applied to the denial—and afterwards, more solid learning to the complete vindication—of an important portion of the Christian evidences.

I must, however, premise some observations, which may apply to other cases, in future lectures, as well as to the one in hand. Is it useful, it may be asked, or is it wholesome, to bring before you objections against sacred and solemn truths which have never been proposed to you, and of which you, perhaps, are ignorant? Would it not be better to waive illustrations of my theme that tend to make you acquainted with religious discussions, or free-thinking assertions, broached in foreign countries, but totally excluded from your own? Were I addressing an illiterate assembly, or were these lectures directed to the instruction

of those who have not travelled—I will not say out of their own country, but—out of their own literature, I own I might be inclined to avoid the mooting of such dangerous inquiries. Or, were the rationalist philosophy of the continent of that seductive kind which ensnares the dallying imagination, or catches the unwary and casual inquirer, I should feel it a duty to close, rather than to open, any avenue which could lead into its enchanted gardens. But the case is far otherwise in both regards. For, in the first place, all know in general that many such strange opinions and fond objections have been made by the pretended philosophers of France or Germany; and any one, however superficially acquainted with the history of literature in these two countries during the last fifty years, is familiar with the names of those who have labored in the unholy work. Now, I apprehend that there is more danger in the vague impression, that learned and able men have rejected Christianity, as irreconcilable with their scientific discoveries or meditations, than in the particular examination of the grounds on which they specifically based their rejection. An able critic has observed, that it was a pity the writings of Julian the Apostate were lost, as it would have been interesting to see what so learned and ingenious a man could object to Christianity. This species of conjecture, and of longing regret, is a thousand times more mischievous than the works themselves could possibly have been: for from the specimens

of Julian's reasoning, preserved by St. Cyril, it clearly appears that his objections must have been of the most flimsy description. Thus, then, when I lay before you objections of freethinkers, wherewith you were previously unacquainted, and with them the satisfactory answers, whereby they have been met and repelled, I trust I shall be much diminishing, rather than increasing, the uneasiness which ill-defined and shadowy apprehension of danger must often produce. Nor can I fear that any one will be easily led, by what I shall say, to any dangerous prying into forbidden pursuits: for the authors with whom I shall mostly deal are such as require a very determined scholar to grapple with them, and a sterner motive, whether good or evil, than curiosity to insure perseverance in their perusal.

Thus much premised, I return to observe, that the point to which I alluded as attacked, by superficial inquirers, upon medical grounds, is no other than the truth of our Saviour's resurrection. You are of course aware that as St. Paul holds this for one of the principal grounds of our faith, without which his preaching would be vain, so have the enemies of Christianity, in ancient and modern times, left no art untried to shake this foundation-stone of our belief. Every apparent contradiction in the narrative of the apostles has been eagerly seized upon to disprove it; but the most direct way in which it has been attacked, of old, and in later ages, is by endeavoring to throw doubts upon

the reality of our Saviour's death. From the earnestness with which St. John seems to dwell upon the last events of his life, and the strong asseverations wherewith he declares himself to have witnessed the piercing of his side,* it would clearly appear that already in his time this solemn and important event had been called in question. I will not for a moment dwell on the coarse and revolting blasphemies of some writers in the last century, who unfeelingly and impiously charged our Blessed Redeemer with feigning death upon the cross; † such monstrous impiety carries confutation in its own absurdity. But modern unbelievers, who will not venture to deny the virtue and holiness of Christ, while they reduce his miracles to mere natural events, have chosen a more artful way of accounting for his resurrection, by imagining that upon medical grounds he could not have died upon the cross, but must have been taken down while in a state of asphyxia or trance. Paulus, Damm, and others, adopt this opinion, and support it by much specious reasoning. It is certain, they say, that, according to the testimony of Josephus and other ancient writers, persons crucified lived for three, or even nine days upon the cross; and hence we find that the two who shared our Saviour's sentence were not dead at evening, and that Pilate

* John xix. 34, 35; coll. 1 John v. 8. See the Bishop of Salisbury's letter to the Rev. T. Benyon, 1829, p. 26.

† For a confutation of this impiety, see Süskind's "Magazin für Christliche Dogmatik," 9 Heft, p. 158.

would not believe that he could so soon have expired, without the centurion's express testimony.* But, on the other hand, nothing is more probable than that fatigue, mental anguish, and loss of blood, should have produced exhaustion, syncope or trance; in which state our Blessed Redeemer is placed at the disposal of his faithful friends, who medicate his wounds with spices and leave him to repose in a quiet and well-sheltered sepulchral chamber. There he soon recovers from the state of suspended animation, and returns to his friends. As to the vigilance of his eager enemies, it is said that there are other instances of that being eluded; as in St. Paul, who was left for dead, after having been stoned at Lystra; or St. Sebastian, who was cured by the Christians after he had been shot with arrows. The piercing of our Saviour's side with a lance is got rid of by saying that the verb used in the Greek (νυττειν) signifies rather to prick, or superficially wound, than to pierce the body! And thus according to them, nothing occurs in the history of his passion to account for death.

Had theologians been left to themselves to answer this specious and superficial reasoning, no doubt their own science would have been fully equal to the task. They could have pointed out sufficient errors in the statements, and an abundant liberty in the assumptions, of these writers, to con-

* See Justius Lipsius, "De Cruce," lib. ii. c. 12; Josephus, "Cont. Apion." p. 1031.

fute them most satisfactorily. But it was much more fitting that the very science which had been enlisted in opposition to religion, should be brought in to throw off from itself the odious imputation, and take the charge of finally confuting the objections pretended to be brought from its own principles.

Several eminent writers had occupied themselves with the physiology of our Saviour's passion, if we may so express ourselves, before this method of attacking it had been resorted to; such were Scheuchzer, Mead, Bartholinus, Vogler, Triller, Richter, and Eschenbach. But a much fuller and more scientific investigation has been since made by the two Gruners, father and son; the latter of whom first wrote under the direction and by the advice of the former. These different authors have collected all that medical analogies could furnish towards establishing the character of our Saviour's sufferings, and the reality of his death.

They have shown that the torments of crucifixion in themselves were fearful, not merely from the outward wounds inflicted, and from the painful posture of the body, or even from the gangrene which must have ensued from exposure to the sun or heat, but also from the effects of this position upon the circulation, and other ordinary functions of life. The pressure upon the main artery or aorta, must, according to Richter, have impeded the free course of the blood; and, by disabling it from receiving all which was furnished by the left

ventricle of the heart, must have prevented the blood from the lungs being returned. By these circumstances, a congestion and effort must have been produced in the right ventricle, "more intolerable than any pain, and than death itself. The pulmonary, and other veins and arteries about the heart and chest," he adds, "by the abundance of blood flowing thither, and there accumulating, must have added frightful bodily suffering to the anguish of mind, produced by the overpowering burden of our sins."* But this general suffering must have made a relative impression upon different individuals; and, as Charles Gruner well observes, the effect it produced upon two hardy and hardened thieves, brought out fresh from prison, must naturally have been very different from that on our Saviour, whose frame and temperament were of a very opposite character; who had been previously suffering a night of tortures and restless fatigue; who had been wrestling with mental agony till one of the rarest phenomena had been caused—a bloody sweat; who must have felt to the most acute degree of intensity all the mental aggravation of his punishment, its shame and ignominy, and the distress of his holy mother and few faithful friends.† And to these he might have added other

* Georgii G. Richteri. Dissertationes Quatuor Medicæ;' *Götting.* 1775, p. 57.

† Caroli Frid. Gruneri "Commentatio Antiquaria Medica de Jesu Christi morte vera non simulata." *Halæ*, 1805, pp 30–36.

reflections; as that our Saviour was evidently weakened beyond other persons in similar circumstances, seeing he was not strong enough to carry his cross, as criminals led to execution were always able to do, and, if the men whom we are answering suppose our Lord to have only fallen into a trance from exhaustion, they have manifestly no right to judge from other cases, for in them even this did not occur. The younger Gruner goes minutely into all the smallest circumstances of the passion, examining them as objects of medical jurisprudence, and particularly takes cognizance of the stroke inflicted by the soldier's lance. He shows the great probability of the wound having been in the left side, and from below, transversely upwards; he demonstrates that such a stroke, inflicted by the robust arm of a Roman soldier, with a short lance,—for the cross was not raised much from the ground,—must, in any hypothesis, have occasioned a deadly wound.* Up to this moment, he supposes our Saviour may have been still faintly alive; because otherwise, the blood would not have flowed, and because the loud cry which he uttered is a symptom of a syncope from too great a congestion of blood about the heart. But this wound, which, from the flowing of blood and water, he supposes to have been in the cavity of the chest, must, according to him, have been necessarily fatal.† His father, Christian Gruner,

* Pages 40–45.

† Page 37. Tirinus and other commentators, as well as many physicians, Gruner, Bartholinus, Triller, and Eschen-

goes over the same ground, and answers, step by step, the additional objections of an anonymous impugner. He shows that the words used by St. John, to express the wound inflicted by the lance, are often used to denote a mortal one,* he proves that even supposing the death of Christ to have been in the first instance apparent, the infliction of even a slight wound would have been fatal, because

bach, suppose this water to have been lymph from the pericardium. Vogler, "Physiologia Historiæ Passionis," *Helmst.* 1693, p. 44, supposes it to have been serum separated from the blood. But from the manner in which St. John mentions this mystical flow, and from the concurrent sentiment of all antiquity, we must admit something more than a mere physical event. Richter observes that the abundant gush of the blood and water, "non ut in mortuis fieri solet, lentum et grumosum, sed calentem adhuc et flexilem, tamquam ex calentissimo misericordiæ fonte," must be considered preternatural, and deeply symbolical. (P. 52.)

* "Vindiciæ Mortis Jesu Christi veræ." *Ibid.* p. 77, *seqq.* A consideration not noticed by any of these authors seems to me to decide the point of the depth of the wound, and place beyond doubt that it could not be superficial, but must have entered the cavity. Our Saviour distinguishes the wounds in his hands from that of his side, by desiring Thomas to measure the former by his finger, and the latter by the insertion of his hand. (John xx. 27.) This, therefore, must have been of the breadth of two or three fingers on the outside. But for a lance, which tapered very gently from the point, to leave a scar or incision on the flesh of such a breadth, at least four or five inches must have penetrated into the body, a supposition quite incompatible with a superficial or flesh-wound. Of course this reasoning is with those who admit the entire history of the passion and subsequent appearance of our Saviour, but deny his real death: and such are the adversaries of the Gruners.

in syncope or trance arising from loss of blood, any venesection would be considered such;* and that in fine, so far from the spices or unguents used in embalming, or the close chamber of the tomb, being fitting restoratives to a person in a trance, they would be the most secure instruments for converting apparent into real death, by suffocation.† To which, we may add Eschenbach's observation, that there is no well-recorded instance of syncope lasting more than one day, whereas, here it must have lasted three;‡ and also, that even this period would not have been sufficient to restore to strength and health a frame which had undergone the shattering tortures of crucifixion, and the enfeebling influence of syncope from loss of blood.

I cannot omit, on this occasion, a case which may confirm some of the foregoing observations; the more so, because, never having been translated into any European language, it is not likely to come in the way of many readers who take an interest in these investigations. I allude to an account of a crucified Mameluke, or Turkish servant, published by Kosegarten from an Arabic manuscript, entitled *The Meadow of Flowers, and the Fragrant Odor.* The narrative, after quoting the authorities, as is usual in Arabic histories, proceeds as follows: "It is said that he had killed

* Page 67.

† Page 70. Charles Gruner, p. 38.

‡ "Scripta Medico-biblica." *Rostock*, 1779, p. 128.

his master, for some cause or other; and he was crucified on the banks of the river Barada, under the castle of Damascus, with his face turned towards the east. His hands, arms, and feet were nailed, and he remained so, from mid-day on Friday, to the same hour on Sunday, when he died. He was remarkable for his strength and prowess; he had been engaged with his master in sacred war at Askalon, where he slew great numbers of Franks; and when very young he had killed a lion. Several extraordinary things occurred at his being nailed, as that he gave himself up without resistance to the cross, and without complaint stretched out his hands, which were nailed, and after them his feet; he in the meantime looked on, and did not utter a groan, or change his countenance or move his limbs." Thus we see a person, in the flower of his age, remarkable for his hardihood and strength, inured to military fatigue, nay, so strong, that we are told in another part of the narrative that "he moved his feet about, though nailed, till he loosened the fastening of the nails, so that if they had not been well secured in the wood, he would have drawn them out;" and yet he could not endure the suffering more than eight and forty hours. But the most interesting circumstance in this narration, and the illustration of the scriptural narrative I had principally in view, is the fact, not I believe mentioned by any ancient describer of this punishment—that the principal torture endured by this servant was that of thirst,

precisely as is intimated in the Gospel history.* For the Arabic narrator thus proceeds: "I have heard this from one who witnessed it—and he thus remained till he died, patient and silent, without wailing, but looking around him to the right and to the left upon the people. But he begged for water, and none was given him; and the hearts of the people were melted with compassion for him, and with pity on one of God's creatures, who, yet a boy, was suffering under so grievous a trial. In the meantime the water was flowing around him, and he gazed upon it, and longed for one drop of it . . . . and he complained of thirst all the first day, after which he was silent, for God gave him strength."†

What I have said may suffice to show how our neighbors on the Continent have directed their medical pursuits to the vindication and illustration of the word of God. There are many other points well worthy of similar attention, many which would well repay the study of a learned physician, who should feel inclined to dedicate some portion of

* John xix. 28. The very fact of drink being prepared proves this circumstance.

† Kosegarten, "Chrestomathia Arabica." *Lips.* 1828, pp. 63–65. There is a little circumstance mentioned in the course of this narrative, which may serve to illustrate what is related of Absalom's hair, 2 Sam. xiv. 26, observing that, according to one opinion, the weight is another expression for the value. "He was the most beautiful of youths, and most fair of countenance, and had the longest hair, the value of which was some thousands of dirhems." (P. 65.)

his abilities and experience to the defence or ornament of religion. I will notice one which seems to me to invite such study, as I know I have the honor to reckon among my audience more than one fully competent for the undertaking. The subject to which I allude is the attempt made by Eichhorn to explain the sudden blindness of St. Paul, when going to Damascus, and his recovery through the ministry of Ananias, by natural and medical considerations. He has collected a number of medical cases, for the purpose of proving that it was no more than an amaurosis, caused by lightning, and curable by means of the simplest character, such as even the imposition of hands upon the head! * Of course this absurd, as well as impious, hypothesis, may be met upon obvious grounds: as the very circumstance recorded, that Ananias told Saul he was come to restore his sight, proves that he trusted not to natural remedies; for, granting that amaurosis *may* accidentally be cured by such simple means, assuredly the most skilful oculist would not venture to predict their efficacy, or rely upon their certainty. But at the same time, it would be still more satisfactory to see this history vindicated, as doubtless it may be, by the very science through which it has been attacked; and to have something written in confutation of Eichhorn's denial of this miracle, of the same nature as we have seen done

* In his "Allgemeine Bibliothek," vol. iii. pp. 13, *seqq.*

in contradiction to the blasphemies of Schuster and Paulus.

It would not be difficult to establish links between the science I have just treated of, and the one on which I next shall enter, that is, Geology. Chemistry, for instance, which presents many analogies to both, might furnish us several interesting applications. But I pass them over, both because they are probably better known, and because the abundance of materials lying before us will not allow us time for less important topics. I hasten therefore forward, to as rapid a view as I can give of the connection between Geology and Sacred History.

Geology may truly be called the science of nature's antiquities. Fresh and young as this power may look to us, and ever vigorous in all her operations,—free from all symptoms of decay as her beauty and energy may appear,—yet hath she too her olden times, her early days of rude contention and arduous strivings, and then her epochs of calmer subsidence, and gentler rule. And the legends of all these she hath written upon monuments innumerable, scattered over the boundless tract of her supreme dominion, in characters which the skill of man hath learnt to decipher. She has her pyramids in those mountain-cones of disputed formation, which rise in every continent,—her mighty aqueducts in the majestic rivers which bestride, as it were, large territories, —now sinking into the depths of earth,—now

flowing in peaceful streams to the reservoirs of the vasty deep; her landmarks and local monuments to note the times and places of her victories over art, or of her defeats by a stronger energy than her own,—her cameos and sculptured gems, in the impressions, upon stone laminæ, of insects or plants,—and we have but even now discovered her cemeteries, or *columbaria*, in those curious caverns wherein the bones of early generations lie inurned, yea enbalmed, by her preserving hand, with evidences and proofs of when they lived, and how they died. And even beyond those times, we may go back to her cyclopean monuments, her fabulous ages of

"Gorgons and hydras and chimeras dire,"

when the huge *saurians* and *megatheria* disported in giant proportions over sea and land, and find, to our astonishment, all that a nightmare fancy might have dreamt of their shapes, recorded in sure representations upon unerring monuments.

Of all sciences, none has been more given up to the devices of man's heart and imagination than geology; none has afforded ampler scope for ideal theories, and brittle, though brilliant, systems, constructed for the most conflicting purposes. In enumerating the various theories of the earth as they are called, which have been framed during the last two centuries, we may conveniently divide them into three classes.

The first should embrace those who assumed the Mosaic cosmogony or creation, and the deluge,

as demonstrated points, and conducted their studies primarily with a view of reconciling actual appearances with these events. In the earlier works of this, as of every other class, there is, naturally more of imagination and ingenuity, than of solidity or research. The older theorists hardly deserve to be dwelt upon; Burnet and Woodward, and Wiston and Hooke, and many others, may deserve praise for their zeal in the cause of religion, but can receive but little for real services in its behalf. Nothing was easier than to show how the world was first created, and how it was destroyed by a deluge, when all the agents employed were pure suppositions, or fictions of the author's imagination. Burnet supposed a brittle crust to have formed the earth's original surface, and a change to have taken place, about the era of the deluge, in the direction of its axis; this imaginary change, which has been sufficiently disproved by modern astronomers, freed the imprisoned waters from their frail bondage, and made them overflow the earth. Whiston was still more poetical. He supposed our earth to have roamed, for ages, through space—

> "A wandering mass of shapeless flame;
> A pathless comet;"—Byron.

till, at the period of the Mosaic creation, its course was bridled in, and it was reclaimed from its vagrant state, to begin the peaceful revolutions of a planet. But then what occurred so soon to interrupt it, in its orderly career, at the deluge? Another

comet is at hand, let loose by almighty vengeance upon the wicked world:

> "Down amain
> Into the void the outcast world descended,
> Wheeling and thundering on: its troubled seas
> Were churned into a spray, and whizzing, flurred
> Around it like a dew."—HOGG.

In this state it bore down upon our little globe, caught it up in its watery atmosphere, and at once drowned and demolished it.

Truly, theories such as these, which caused Voltaire, in his scoffing mood, to say that "philosophers put themselves, without ceremony, in the place of God, and destroy and renew the world after their own fashion," materially hurt, instead of assisting, the cause of religion. For De la Beche has observed, that when a river grows impetuous in its course, and threatens an inundation, they are the bridges which men have thrown over it, that they may pass it in safety, or the drains they have constructed to turn it into useful purposes, which give its waters a dangerous accumulation, and by opposing a frail bar, impart to them, when this is broken, a more fearful rush;* and so may we here say, that the artificial means thus taken to pass unhurt over what were deemed the dangers of this study, and to apply it to profitable ends, did rather give those dangers a greater power; and, as Dr. Knight observes, when they were overthrown by the advance of science, seemed

* "A Geological Manual," 3rd edit. 1833, p. 65.

to entail some disgrace upon the subjects they pretended to illustrate.*

I am unwilling to say anything of living authors, where blame must almost seem to be cast upon labors directed by a zealous love of religion, and for the most disinterested purposes. But I am sure that the cause of religion is no way served by crude theories, or the rejection of facts repeatedly demonstrated. I shall have to allude, though very briefly, to the warm attacks made by Mr. Granville Penn upon Dr. Buckland's discoveries and observations regarding the antediluvian remains of bone-caverns; it is impossible not to be struck with the manner in which he seizes hold of secondary or inconsiderable circumstances and inferences, and denies, through them, the more general and important results. Mr. Fairholm follows much the same process: for instance, before observations had been well collated, some geologists had considered the *mastodon* a native exclusively of America; the discovery of its bones in Europe is enough, according to him, to overthrow the whole system of fossil animals.† If we reason that there are extinct

* "Facts and Observations towards forming a New Theory of the Earth." *Edinb.* 1819. p. 262. See also, Conybeare and Philip's "Outline of the Geology of England." *Lond.* 1822, p. xlix. And the "Correspondance particulière entre M. le Tr. Teller et J. A. De Luc." *Hanov.* 1803, p. 161.

† We know that, in America, the remains of both the Mastodon and Mammoth are constantly discovered on the same soils. This circumstance would of itself be sufficient to

species of animals, because the huge bones of the *saurians*, or the capricious skeletons of the *pterodactyli* have no parallel in the known modern world, all this is inconclusive; because we have not yet explored all the rivers in the interior of Africa, and consequently know not but these animals may exist in their vicinity!*

But while upon this theme, and while alluding to authors who reject all geological facts and principles, and then pretend to reconcile geology with the Mosaic history; who severely reprove geologists for framing any theory in their science, and then fashion to themselves *two*, one of geology, and another of the inspired narrative; I cannot pass over one writer, who, perhaps, of all others the most visionary, partly by declamation, more by distortion, chiefly by perversity of reasoning, attacks this study as essentially antichristian, and consigns all foreign geologists, at least, to the anathema of true believers. I allude to Dr. Croly's *Divine Providence*, a book which seems to assume that Christianity was undemonstrated, till the author discovered the marvellous parallelism between Abel and the Waldenses, Enoch and the Bible, ("the two witnesses in sackcloth!") Constantine and Moses, the relics of the Apostles and the two golden calves, Ezra and Luther, Nehemia and the Elector

destroy the whole theory of geologists, who confined the Mastodon to America."—"A General View of the Geology of Scripture."—*Lond.* 1833, p. 368.

* Page 366.

of Saxony.* Surely, one so visionary, and one, moreover, who had been sufficiently courageous to add another baseless theory to the shivered fragments of preceding apocalyptic interpretations, should have paused before he scoffed at a science because of the many systems imagined by its cultivators. To detail the various inaccuracies, philological and physical, in the declamations of this writer †—to expose the false views which he gives of the tendencies of geology, especially on the

* "Divine Providence; or, the Three Cycles of Revelation." *Lond.* 1834. Compare the preface with these strange comparisons, pp. 549, 571, 581, etc.

† For instance, p. 95, after Granville Penn, Dr. Croly denies that the *days* of creation can mean anything but the space of twenty-four hours; because among other reasons, the Hebrew word יום *yom*, comes from the verb *yama* (*ferbuit*). There is no such a verb in Hebrew (consult Winer's Lexicon, p. 406), neither if there were, could it be root to the other. In Arabic, there is a cognate verb, وما *wama*, (ferbuit *dies*), "*the day* was hot:" but surely the simple term *day*, could in no language be derived from the idea of a *hot day*. To prove that the word day could not symbolically signify a longer term, because literally it means the period of light, "the time between two sunsets," is surely an error in logic: you might as well say that night cannot mean death, because it signifies the time between sunset and sunrise. I do not advocate the prolongation of the days to periods: but I think it very wrong to call men infidels for doing so, when only such erroneous grounds are given to the contrary. The terms used to express the sun's standing still are just as literal and express as those used in the history of creation; yet no one hesitates to take them figuratively, because demonstrated laws of physics compel us to do so.

‡ Dr. Croly always affects to speak against *foreign* geology: and even in a note contrasts with it the conduct of the

Continent,†—to confute, particularly, the unjust and unjustifiable criticism he passes on the views and reasonings of the learned Dr. Buckland would require not much time, but more than the work deserves. The charge of infidelity, whether against a large class of men, or against particular writers, is easily made; it resembles, in our days, the vague outcry of treason or suspicion, which, in times of commotion, will bring down, without examination, popular indignation or vengeance upon the most innocent: and I know not if there be a worse class of slander than that which endeavors to affix the most odious of stigmas upon any one who shall dare to think differently from ourselves upon matters indifferent.

But if we feel inclined to speak severely of those who have been builders of systems without foundations, but with correct motives at least, we must not forget that another class too has been guilty of no less, or rather of far greater, extravagance, without even this ground for extenuation of censure. I allude to those whose theories were framed in direct opposition to the inspired records. The last century produced plenty such in France; and one in particular, which if not intended, was at least conceived, by too many admirers to be in conflict with the Mosaic narration. I mean Buffon's, who

† English Geological Society, p. 108. And yet he must have known that all eminent English geologists concur in the opinions he so severely denounces, of great revolutions prior to that of the deluge.

in his celebrated *Epochs of Nature*, published in 1774, repeated and illustrated the *Theory of the Earth*, which he had produced twenty-six years before.* All that brilliancy of imagination, charm of style, and decision of tone, could do in favor of any theory, this one certainly possessed. "He came forward," says Howard, "no longer to give a bold conjecture on the formation and theory of the universe, but with pretended proofs in hand, to evince not only the possibility, but, on most points, the necessary truth, of his former assertions. This was no longer in the style of a man who offers his conjectures to the world, but in the magisterial and dictatorial tone of one who is perfectly sure of whatever he advances."† The basis of his theory was, that the earth had originally been a mass of fire, heated to an almost incredible degree, and that it has been gradually cooling till our own times; so that at each appropriate stage in this process, it produced the plants and animals suited to each degree of warmth. It cannot be necessary to enter into any explanation of the dissension which now exists concerning the grounds of this theory; that is, as to whether a process of gradual cooling is going on in the earth. M. Arago

* Rousseau was among those who placed Buffon's system in opposition to the scriptural account, and gave it the preference.—See De Luc, "Discours Préliminaire," in his "Lettres sur l'Histoire Physique de la Terre." *Paris*, 1798, p. cx.

† Howard's "Thoughts on the Structure of the Globe." *London*, 1797, p. 286.

contends, upon observation, that the exact accordance of climate, so far as we can reason between ancient and modern times, will not allow the admission of this supposition. And he argues from elements which a French philosopher at the time of Buffon would, I think, have hardly ventured to use, without consenting to incur the ridicule of being too credulous. For, with the books of Moses in his hand, he shows that the seasons in Palestine correspond now exactly to what they were in his time, as to order of succession and power of production; and he thence concludes that no alterations of climate can possibly have occurred.* To which reasoning, perhaps, it might be objected, that a gradual change of climate, by degrees almost imperceptible, except at long intervals, might produce a corresponding modification in the habits, if one may so speak, of plants and vegetables. Connected with this subject, and bearing in an interesting manner upon geological facts, is the question of central heat, which has been treated with great mathematical accuracy and learning by Fourrier and Poisson, the former maintaining the existence of a radiating heat in the interior of the earth; the other, while he admits the experimental facts, denying the conclusions. But any discussion of this question would lead us too far from the matter in hand.

From the time of Buffon, system rose beside system, like the moving pillars of the desert, ad-

* Annuaire du Bureau des Longitudes," for 1854.

vancing in threatening array; but, like them, they were fabrics of sand; and, though in 1806 the French Institute counted more than eighty such theories hostile to Scripture history, not one of them has stood still, or deserves to be recorded.

The third and most important class of geologists comprises those who, without positively constructing theories, have been content to collect phenomena, and to classify and compare them. And geology, in this, its true sense, owes its origin and principal development to Italy. Brocchi, in a preliminary discourse to his *Conchiologia fossile subapennina*, has done ample justice to his country by describing a series of geological writers, principally treating of fossils, such as no other country can produce. It would be tedious to enumerate them; though later I may have to allude to some of their amusing speculations. Suffice it for the present to say, that throughout their works there appears a fear of pushing their conclusions too far—a sort of lurking apprehension that if bold consequences were drawn from their opinions, they might be found at variance with more important truths. Of this uneasiness, the writings of Moro, Vallisnieri, and Generelli, would furnish ample proofs.

It is not, however, to be understood that in this class are to be comprehended writers *indifferent* to the bearings of their science upon religion; on the contrary, in it are to be placed its most zealous upholders, and those who have really served it

most effectually, although they have carefully refrained from constructing formal theories of the earth. Thus, De Luc, who through the course of a very long life never lost sight of the Scripture narrative, has been a most valuable collector and collator of facts. The researches of Dolomieu, Cuvier, Buckland, and innumerable others, whose judgment you shall hear in their proper places, have been conducted without any spirit of system, and yet have proved most favorable to the cause of truth.

While science is in the hands of men thus persuaded of the certainty of those great leading facts which are enrolled in the sacred account of the world's early history, assuredly the writers, whom I have quoted as hostile to this study, should have little cause to fear. So long, indeed, as phenomena are simply recorded, and only the natural and obvious consequences drawn from them, there can be no fear that the results of the study may prove hostile to religion. How much wiser was the counsel of Gamaliel, and how applicable to those who impugned these pursuits: "Refrain from these men and let them alone; for if the work be of men, it will fall to nothing; but if of God, ye are not able to destroy it."* If the representations they have given of nature are the fictions of men, they cannot stand against the progress of science; if they truly picture the work of God, they must be easily reconcilable with his revealed manifestations.

* Acts v. 38, 39

Before entering directly upon the greater conclusions of this science, I will stop to notice an instance of one of those popular objections raised, upon a specious reasoning, from ill-observed facts, which, for a time, was again and again repeated, and produced no inconsiderable impression. Brydone, in his *Tour in Sicily*, wrote as follows:— "What shall we say of a pit they sunk near to Jaci, of a great depth? They pierced through seven distinct lavas, one over the other, the surfaces of which were parallel, and most of them covered with a thick bed of fine rich earth. Now," says he (the canon Recupero), "the eruption that formed the lowest of these lavas, if we may be allowed to reason from analogy" (that is, allowing two thousand years for a stratum of lava to be covered with vegetable mould), "must have flowed from the mountain at least fourteen thousand years ago. Recupero tells me he is exceedingly embarrassed by these discoveries, in writing the history of the mountain. That Moses hangs like a dead weight upon him, and blunts his zeal for inquiry, for that really he has not the conscience to make his mountain so young as that prophet makes the world. What do you think of these sentiments from a Roman Catholic divine? The bishop, who is strenuously orthodox, for it is an excellent see, has already warned him to be upon his guard, and not to pretend to be a better natural historian than Moses; nor to presume to urge anything that may in the smallest

degree be deemed contradictory to his sacred authority."*

It is difficult to say where to begin in answering this absurd statement, whether with the scientific, or with the moral delinquencies it heaps together. Some writers believed this story, and give the canon credit for profound experience and learning in this matter, and thus were seduced by the first class of errors: others, like Dr. Watson, while they rejected the reasoning pursued, did not spare either the poor ecclesiastic or his bishop, for their respective conducts.† Both classes were equally wrong; for, in the first place, it does not take two thousand years, nor two hundred, to cover lava with what, to unskilful observers, will appear earth; secondly, the strata of Jaci Reale are not covered with vegetable mould; thirdly, the canon Recupero never asserted what Brydone has put into his mouth, nor drew any such consequences.

The first point has been placed beyond doubt, by a scientific observer, who surveyed the coast of Sicily, by order of the British Government: "The practice," says Captain Smith, "of estima-

* "A Tour through Sicily and Malta." *London*, 1773. vol. i. p. 131.

† "I will not add more upon this subject, except that the bishop of the diocese was not much out in his advice to Canon Recupero, to take care not to make his mountain older than Moses; though it would have been fully as well to have shut his mouth with a reason, as to have stopped it with the dread of an ecclesiastical censure."—Two Apologies, 1816, p. 156.

ting the ages of lava by the subsequent progress of vegetation, is founded on a fallacious theory; as that progress must depend on their local situation, their porosity, and their component parts. Nor is more dependence to be placed on the alternate strata of lava and earth, as a shower of ashes, assisted by filtration of rain, soon forms a stratum of earth resembling argil. Some of the volcanic masses of the Æolian islands, that have existed beyond the reach of history, are still without a blade of verdure; while others, in various parts, of little more than two hundred years' date, bear spontaneous vegetation; and the same is seen on two lavas of Ætna near each other; for the one of 1536 is still black and arid, while that of 1636 is covered with oaks, fruit trees, and vines."* Sir W. Hamilton has made the same remark upon the lava currents which have passed over Herculaneum, the period of whose destruction is so well known in history. "The matter which covers the ancient town of Herculaneum," he says, "is not the produce of one eruption only; for there are evident marks that the matter of six eruptions has taken its course over that which lies immediately above the town, and was the cause of its destruction. These strata are either of lava or burnt matter, with veins of good soil betwixt them."†

The second and third points were sufficiently

* "Memoir on Sicily and its Islands." *London*, 1821 p. 164. See also Knight, "Facts and Observations," p. 264.

† "Philosophical Transactions," vol. lxi. p. 7.

made good by Dolomieu, who vindicated the canon's character, while he established, by personal observation, that no vegetable mould whatever exists between the lava beds of Jaci Reale. These are his words: "The canon Recupero deserves neither the praises which have been bestowed on his science, nor the doubts raised against his orthodoxy. He died without any other annoyance than that inflicted on him by Brydone's work. He could not understand for what end this stranger, to whom he had been kind, should endeavor to excite suspicions concerning the correctness of his belief. This simple man, who was very religious, and sincerely attached to the faith of his fathers, was far from admitting, as evidence against the book of *Genesis*, pretended facts which are false, but from which, even if true, nothing could have been concluded. Vegetable earths, between the several beds of lava, do not exist; and the argillaceous earths which are sometimes there may have been placed there by means quite independent of the antiquity of Ætna."* I will only add to this satisfactory confutation, from my own personal knowledge, that Swinburne's statement is incorrect, that Recupero was deprived of his benefice, and otherwise persecuted, in consequence of Brydone's statement. His character was too well known at home to be injured by such calumny; and in fact, after its publication, he received a pension from the government which

* "Mémoire sur les Isles Ponces." *Paris*, 1788, p. 471.

he enjoyed till his death.* You will further see, in its proper place, how even if vegetable mould did exist between many successive layers of lava, no conclusion could thence be drawn in reference to the period of the present order of things.

Still we cannot too harshly censure the cruelty of the slanderer, who could thus requite kindness by a groundless aspersion, necessarily tending to bring suspicion, if not even ruin, upon the person whom he called his friend. And at the same time this may serve as an example of the crude and ill-directed speculations to which a superficial and unscientific observer may bring himself and others.

And after so long a preamble, come we now to see in what way the doctrines of geology bear upon the inspired records, and how far the phenomena, observed by men upon whose accuracy we may rely, are in accordance with their artless narrative.

The first point of contact between this study and the Mosaic history, is the creation of the world. Dr. Sumner thus briefly enumerates the questions whereon the connections between the two may be discussed: "The account in Genesis may be briefly summed up in these three articles: first, that God was the original creator of all things; secondly, that at the formation of the globe we inhabit, the whole of its materials were in a state of chaos and confusion; and thirdly, that at a period not exceeding 5,000 years ago (5,400)—whether we adopt the Hebrew or Septuagint chronology is

* "Journal des Savans," 1788, p. 457.

immaterial—the whole earth underwent a mighty catastrophe, in which it was completely inundated, by the immediate agency of the Deity."*

Some writers have attempted to read the days of creation step by step in the present appearances of the world, and to give a history of each successive production, from light to man, as recorded upon the face of the globe. All this, however laudable in its object, is not certainly satisfactory in its results. The first portion of my task, therefore, shall be rather negative than positive—an attempt to show you that the startling discoveries of modern science no ways clash, or stand at variance, with the Mosaic narrative.

And in the first place the modern geologist must, and gladly will, acknowledge the accuracy of the statement, that after all things were made, the earth must have been in a state of chaotic confusion; in other words, that the elements, which later were to combine in the present arrangement of the globe, must have been totally disturbed, and probably in a state of conflicting action. What the duration of this anarchy was, what peculiar features it presented, whether it was one course of unmodified disorder, or was interrupted by intervals of peace and quiet, of vegetable and animal existence, the Scripture has concealed from our knowledge, while it has said nothing to discourage such investigation as may lead us to any specific hypothesis regarding it. Nay, it would seem as

* "Records of Creation," vol. ii. p. 344.

though that indefinite period had been purposely mentioned, to leave scope for the meditation and the imagination of man. The words of the text do not merely express a momentary pause between the first fiat of creation and the production of light; for the participal form of the verb, whereby the Spirit of God, the creative energy, is represented as brooding over the abyss, and communicating to it the productive virtue, naturally expresses a continuous, not a passing, action. The very order observed in the six days' creation, which has reference to the present disposition of things, seems to show that divine power loved to manifest itself by gradual developments, ascending as it were, by a measured scale from the inanimate to the organized, from the insensible to the instinctive, from the irrational to man. And what repugnance is there in the supposition that from the first creation of the rude embryo of this beautiful world, to the dressing out thereof with its comeliness and furniture, proportioned to the wants and habits of man, it may have also chosen to keep a similar ratio and scale, through which life should have progressively advanced to perfection, both in its inward power and in its outward instruments? If the appearances discovered by geology shall manifest the existence of any such plan, who will venture to say that it agrees not, by strictest analogy, with the ways of God, in the physical and moral rule of this world? Or who will assert that it clashes with His sacred word, seeing that in this indefinite period, wherein this

work of gradual development is placed, we are left entirely in the dark? Unless, indeed, with one now enjoying high ecclesiastical preferment, we suppose allusion made to such primeval revolutions, that is, destructions and reproductions, in the first chapter of Ecclesiastes;* or with others we take the passages wherein *worlds* are said to have been created in their most literal sense.†

It is indeed singular that all ancient cosmogonies should conspire to suggest the same idea, and preserve the tradition of an early series of successive revolutions, whereby the world was destroyed and renewed. The institutes of Menu, the Indian work most closely agreeing with the Scripture narrative of the creation, says: "There are creations also and destructions of worlds innumerable; the supremely exalted Being performs all this with as much ease as if in sport, again and again, for the sake of conferring happiness."‡ The Burmese have similar traditions; and a scheme of their various destructions of the world by fire and water, may be seen in the interesting work of Sangermano, translated by my friend Dr. Tandy.§ The Egyptians too have, by their great cycle, or Sothic period, recorded a similar opinion.

* "Ricerche sulla Geologia." *Rovereto*, 1824, p. 63.

† Heb. i. 2. In like manner one of the titles of God in the Koran is, رب العالمين—the Lord of the worlds.—*Sura* i.

‡ "Institutes of Hindu Law." *Lond.* 1825, chap. i. No. 80 p. 13, comp. No. 57, 74, etc.

§ "A Description of the Burmese Empire," printed for the Oriental Translation Fund. *Rome*, 1833, p. 39.

But I think it much more important and interesting to observe how the early Fathers of the Christian Church should seem to have entertained precisely similar views; for St. Gregory Nazienzen, after St. Justin Martyr, supposes an indefinite period between the creation and the first ordering of all things.* St. Basil, St. Cæsarius, and Origen, are much more explicit; for they account for the creation of light prior to that of the sun, by supposing this luminary to have indeed before existed, yet so as that its rays were prevented, by the dense chaotic atmosphere, from penetrating to the earth; this was on the first day so far rarified as to allow the transmission of the sun's rays, though not the discernment of its disc, which was fully displayed on the third day.† This hypothesis Boubée adopts as highly conformable to the theory of central heat, and the consequent solution of substances in the atmosphere; which would gradually be precipitated as the dissolving medium cooled.‡ Nay, if Dr Croly is so indignant at some geologists for considering the days of creation indefinite periods, because according to its etymology the word used signifies

* Orat. ii. tom. i. p. 51, ed. *Bened.*

† "St. Basil Hexæmer," hom. ii. *Paris*, 1618, p. 23. "St Cæsarius, Dial. i. Biblioth. Pat. Gallandi." *Ven.* 1770, tom. vi. p. 37. "Origen Periarch." lib. iv. c. 16, tom. i. p. 174, ed. *Bened.*

‡ "Géologie Elementaire à la portée de tout le Monde. *Paris*, 1833, p. 37.

"the time between two sunsets," what will he say to Origen, who in the passage I have alluded to, exclaims, "Who that has sense can think that the first, second, and third days were without sun, or moon, or stars?" Assuredly the time between two sunsets would exist most anomalously without a sun.

In making these remarks, I am not guided by a personal predilection for any system. I have no claim to be called a geologist; I have studied the science more in its history than in its practical principles; rather to watch its bearings upon more sacred researches, than from any hope of personally applying it. I will just now give you another method, whereby some able geologists think they prove the beautiful accordance of this study with Scripture. I do not pretend—it would be presumption in me to pretend—to judge between the two, or pronounce upon the reasons which each may advance. But I am anxious to show that there is plenty of room, without trenching upon sacred ground, for all that modern geology thinks it has a right to demand. I am anxious,—and I trust the authorities I just now gave will secure that point,—to show that what has been claimed or postulated by it, has been accorded of old by ornaments and lights of early Christianity, who assuredly would not have sacrificed one tittle of scriptural truth.

But what, you will ask me, renders it necessary, or expedient, thus to suppose some intermediate

period between the act of creation and the subsequent ordering of things as they now exist? According to my plan, it is my duty to explain this point, and I will endeavor to do so with all possible brevity and simplicity. Within, comparatively, a few years, a new and most important element has been introduced into geological observation—the discovery and comparison of fossil remains. Every one of my hearers is doubtless aware that in many parts of the world enormous bones have been found which used to be considered those of the elephant—the *mammoth*, as it was called from a Siberian word, designating a fabulous subterraneous animal. Besides these and similar remains, vast accumulations of shells, and impressions of fishes in stones, as at Monte Bolca, have been at all times discovered, in every country. All these used formerly to be referred to the deluge, and quoted as evidence that the waters had covered the entire globe, and extinguished terrestrial life, as well as deposited marine productions upon the dry land. But perhaps you will hardly believe me when I say that, for many years, the fiercest controversy was carried on in this country (Italy) upon the question, whether these shells were real shells, and had once contained fish, or were only natural productions, formed by, what was called, the "plastic power of nature," imitating real forms. Agricola, followed by the sagacious Andrea Mattioli, affirmed that a certain fat matter, set in fermentation by

heat, produced these fossil shapes.* Mercati, in 1574, stoutly maintained that the fossil shells collected in the Vatican, by Sixtus V., were mere stones, which had received their configuration from the influence of celestial bodies;† and the celebrated physician Fallopio asserted that they were formed, wherever found, by "the tumultuary movements of terrestrial exhalations." Nay, this learned author was so adverse to all idea of deposits as boldly to maintain that the potsherds which form the singular mound, known to you all under the name of Monte Testaceo, were natural productions, sports of nature to mock the works of man.‡ Such were the straits to which these zealous and able men found themselves reduced, to account for the phenomena they had observed.

As a more accurate attention was paid to the order, and to the strata, in which the remains of

* "Agricola sognava in Germania, che alla formazione di questi corpi fosse concorsa non so qual materia pingue, messa in fermento dal calore. Andrea Mattioli addottó in Italia i medesimi pregiudizii."—Brocchi, Conchiologia Fossile Subapennina, tom. i. *Milan*, 1814, p. v.

† "Egli niega che le conchiglie lapide fatte sieno vere conchiglie; e dopo un lunghissimo discorso, sulla materia e sulla forma sostanziale, conchiude che sono pietre in cotal guisa configurate dall' influenza dei corpi celesti."—*Ibid.* p. viii.

‡ "Concepisce più facilmente che le chiocciole impietrite siano state generate sul luogo, dalla fermentazione, o pure, che abbiano acquistato quella forma, mediante il movimento vorticoso delle esalazioni terrestri."—P. vi.

animals were found, it was perceived that there was a certain ratio existing between the two. It was, moreover, observed, that many of these remains lie entombed in situations which the action of the deluge, however violent and exten sive, could never have reached. For, we must suppose this action to have been exercised upon the surface of the earth, and to have left signs of a disturbing and destructive agency; whereas, these remains were found below the strata which form the outermost rind of the earth's crust; and this reposed over them with all the symptoms of a gradual and quiet deposit. Again, if we consider these two observations in unison, supposing the whole to have been deposited by the deluge, we should expect to find them mixed in complete confusion: whereas, we discover that the lower strata, for instance, exhibit peculiar classes of fossils: then, those which are superimposed, are again pretty uniform in their contents, though, in many cases, they differ from the inferior deposits, and so forward to the surface. Which symmetry of deposition through each range, while it is dissimilar to the preceding one, supposes a succession of actions exercised upon varied materials, and not one convulsive and violent catastrophe. But this conclusion seems put out of doubt by the still more unexpected discovery that, while in movable beds, or wherever the deluge can be supposed to have left its traces, we find the bones of animals belonging to existing genera; among

the more deeply-seated fossils such are never discovered. On the contrary, their skeletons give us a representation of monsters, whether considered in their dimensions or their forms, such as have not even analogous species now existing, and should seem to have been incompatible with the co-existence of the human race.

This latter consideration deserves some illustration, because it will introduce such as have not paid attention to this science, to some knowledge of its recent discoveries. They may, perhaps, wonder how, from a few fractured bones, any judgment can be formed of the animals to which they belonged. Some years ago the problem would have appeared absurd—to reconstruct an animal from one of his bones; and yet we may truly say that it has been most fully solved. It may be, perhaps, unnecessary to observe, that so perfect is the individuality of each species of animals that every bone, almost every tooth, is sufficiently characteristic, to determine its shape. The careful study of these varieties, and the analogous results to which it always leads, were the basis on which the lamented Cuvier rested his extraordinary construction of this new science. The habits or characters of animals, as I once before had occasion to remark, impress their peculiarities upon every portion of their frames: the carnivorous animal is not merely so in its fangs and its claws; every muscle must be proportioned to the strength and agility required for

its method of living, and every muscle grooves the bones which it grasps, or under which it passes, with a corresponding cavity. Nothing can be more curious than the convincing, though unexpected analogies by which Cuvier confirms his theory; for he shows a constant and ever-proportioned relation between parts apparently unconnected, such as the feet and the teeth.

When, however, he first commenced the application of his principles of comparative anatomy to the broken remains of bones dug up in the limestone quarries of Montmartre, he soon discovered that they were referable to no species now inhabiting the globe. Yet so sure were the scientific principles which guided him, that he easily apportioned the bones to different animals, according to their various structure and size; and he pronounced them to represent animals of the *pachydermatous*, or thick-skinned class, and most closely allied to the tapir. He distinguished two genera, and discovered even several subdivisions, and gave them their appropriate names. The two genera he styled the *palæotherium*, or ancient animal, and the *anaplotherium*, or unarmed, from the circumstance of the one being distinguished from the other by a want of tusks. His results must not, however, be looked upon as mere conjectures: for when it happened, after he had constructed from such analogy the skeleton of any animal, that an entire skeleton, or any part not before possessed, was discovered, he was found to

have been invariably right in his suppositions, and in no case, I believe, was it necessary to modify his conjectural restoration.*

In some instances, indeed, naturalists have been sufficiently fortunate to discover the spoils of these extinct monsters in such completeness as to dispense with the toilsome process I have explained. Spain, for example, was early in possession of an almost complete skeleton of the *megatherium*, as it is now called, sent over from Buenos Ayres, in 1789, by the Marquis de Loreto: it was reunited in the cabinet of Madrid, and published in plates by Juan Bautista Bru. Other fragments, indeed a considerable portion of the bones, of the same animal have been since brought over to England by Mr. Parish, and presented by him to the Royal College of Surgeons; and, fortunately, they serve in a great measure to fill up the defective parts of the Madrid specimen.† We have thus an animal, with the head and shoulders of the sloth, yet with limbs and feet between the armadillo's and the ant-eater's. But, at the same time, it must have

* See his principles in the "Extrait d'un ouvrage sur les espèces des quadrupèdes dont on a trouvé les ossemens dans l'intérieur de la Terre," p. 4; in his "Discours préliminaire, Recherches sur les ossemens fossiles," vol. i. p. 58. Published likewise separately.—See also vol. iii. p. 9. *seqq.* for the processes followed in the creation, as he calls it, of the new genera.

† See a plate, showing the parts supplied by each in the "Geological Transactions," New Series, vol. iii. 1835, plate xliv. with a minute description by Mr. Clift, p. 437.

equalled the largest elephant in size, being thirteen feet long, and nine high.

Still more strange are the classes of animals allied to the *saurian*, or lizard tribe; the enormous dimensions and almost chimerical shapes of some among which would hardly have been conceived by the imagination. The *megalosaurus*, as it has been justly named by Dr. Buckland, was at least thirty feet long; indeed, judging from a specimen found in Tilgate Forest, in Sussex, it seems, after making every reduction, to have attained the frightful length of sixty or seventy feet.* The *ichthyosaurus*, or fish-lizard, when discovered in parts, presented such strange incongruities that its limbs could hardly be supposed to belong to the same animal. It was not till after repeated discoveries that Conybeare and De la Beche produced an animal with the head of a lizard, a fish's body, and four paddles instead of legs. The size of some of these monsters must have been enormous, as the specimens in the British Museum will satisfy any observer. Still more fantastical is the formation of the *plesiosaurus*, or, as it has been now more properly named, *enaliosaurus*, or sea-lizard, which, to characteristics similar to the others, joins a neck longer than that of any swan, at the extremity of which is a very small head.† In fine, not to detain you upon such mere illustrations,

* *Ibid.* vol. i. 1825, p. 391.

† See "Geological Transactions," vol. i. pp. 43, 103.

another far more extraordinary, and I might al most say fabulous, animal, has been discovered, to which the name of *pterodactylus* has been given by Cuvier, who first determined its character from a drawing by Collini, and had the satisfaction of afterwards seeing his decision confirmed by several specimens. This he pronounces to have been the strangest animal of the ancient world: for it had the body of a reptile or lizard, with excessively long legs, manifestly formed, like the bat's, to expand a membrane, by which it was enabled to fly, a long beak, armed with sharp teeth; and it must have been covered, neither with hair nor feathers, but with scales.*

These examples, out of many, may be sufficient to show you that the species of animals found imbedded in limestone, or other rocks, have no corresponding types in the present world; and that if we consider them in contrast with the existing genera, which are found in more superficial beds, we must conclude that they were not destroyed by the same revolution as swept the latter from the face of the earth, to be renewed from the specimens preserved by God's command.

Some naturalists have, in spite of the valuable use made by our geologists of fossil remains, even in the comparison of mineralogical strata, persisted in excluding them from geology, as foreign to the

* "Ossemens Fossiles," vol. iv. p. 36; vol.v. part ii. p. 379. De la Beche, in "Geological Transactions," vol. iii. p. 217.

science.* But it is impossible to shut our eyes to the new light which these discoveries have shed upon its study, and consequently to neglect considering the relation in which the science, thus enlarged, stands to the scriptural account. So far, I think that, however negative our conclusion may appear, it is highly important; for the first step in the connection of any science with revelation, after it has passed through the tumultuary period of crude, conflicting theory, is, that it gives no result adverse to revelation. And this is, in fact, a positive confirmation. For, as I will more fully demonstrate in my concluding lecture, the beautiful manner in which the scriptural narrative, subjected to the examination of the most different pursuits, defies their power therein to discover any error, forms, in the aggregate of various examples, a strong positive proof of its unassailable veracity. Thus here, had the Scripture allowed no interval between creation and organization, but declared that they were simultaneous or closely consecutive acts, we should, perhaps, have stood perplexed in the reconciliation between its assertions and modern discoveries. But when, instead of this, it leaves an undecided interval between the two, nay more, informs us that there was a state of confusion and conflict, of waste and darkness, and a want of a proper basin for the sea, which thus would cover first one part of the earth and then another; we

* As Dr. MacCulloch, in his "System of Geology, with Theory of the Earth." *London*, 1831, vol. i. p. 430.

may truly say, that the geologist reads in those few lines the history of the earth, such as his monuments have recorded it,—a series of disruptions, elevations, and dislocations; sudden inroads of the unchained element, entombing successive generations of amphibious animals; calm, but unexpected subsidences of the waters, embalming in their various beds their myriads of aquatic inhabitants;* alternations of sea and land, and fresh-water lakes; an atmosphere obscured by dense carbonic vapor, which by gradual absorption in the waters was cleared away, and produced the pervading mass of calcareous formations; till at length came the last revolution preparatory for our creation, when the earth, being now sufficiently broken for that beautiful diversity which God intended to bestow on it, or to produce those landmarks and barriers which his foreseeing counsels had designed, the work of ruin was suspended, save for one more great scourge;—and the earth remained in that state of sullen and gloomy prostration, from which it was recalled by the reproduction of light, and the subsequent work of the six days' creation.

But I think we may well say, that even on this first point of our geological investigation, science has gone further than I have stated. For I think we are in a fair way to discover so beautiful a simplicity of action in the causes which have pro-

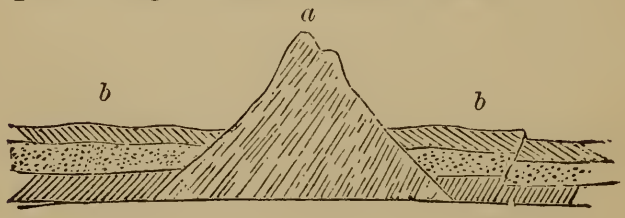
* See this point beautifully treated by De la Beche, "Researches into Theoretical Geology." *London*, 1834. chap. xii. p. 242.

duced the present form of the earth, and at the same time such a manifest approach to the progressive method manifested in the known order of God's works, as to confirm, if such a term may be used, all that he hath manifested in his own sacred word.

For when I have spoken of successive revolutions, destructions, and reproductions, I have meant not a mere series of unconnected changes, but the steady action of a single cause, producing most complete variations, according to established laws. And this, I may say, it is certainly the tendency of modern geology to establish. I have before slightly touched on the subject of central heat, or the existence of a principle of that power, in the interior of the earth: whether it arise from the former state of the globe, or from some other source, it matters not. That its action can be even now sufficiently violent to effect revolutions on our earth,—great, if viewed in reference to particular tracts,—in miniature, if compared to its primeval efforts, must be known, from observation, to most of you who have visited the scenes of volcanic action. There, islands have been formed, and swallowed up again, hills have been raised, the cones of mountains broken down, the sea has altered its boundaries, and fruitful fields have been changed into black tracts of desolation. Suppose this power acting on a gigantic scale, not in one district, but over the entire world, now bursting out on one side, and now on the other; the effects must have

been convulsive to a frightful degree, the disruptions must have been far more tremendous, and mountains may have been heaved up instead of hills, like Monte Rosso, which Ætna raised in 1669, or the sea may have invaded large territories, instead of small tracts of coast.

The observations of geologists go far towards proving the action of some such power, in the manner which I have described: Leopold von Buch first proved that mountains, instead of being the most immovable and firm portions of the earth's structure, and existing previously to the softer materials which repose on their sides, have, on the contrary, been raised up through these, by an upheaving action from below. M. Elie de Beaumont has carried this observation so much further as almost to be considered the founder of the theory. One simple demonstration of it you will easily comprehend. If the various strata on the side of a mountain, though necessarily precipitations of a solution in water, instead of lying horizontally, as such precipitations must do, and consequently cutting the mountain's sides at angles, thus (*a* being the section of the mountain, and *b* representing the surrounding strata)—



shall, on the contrary, lie parallel to its sides in this manner—

it is manifest that the mountain must have been thrust up through the strata already deposited. M. de Beaumont, by comparing the various strata thus perforated, as it were, by each chain of mountains, with those which lie in horizontal order, as if deposited after its elevation, endeavors to determine the period, in the series of primeval revolutions, when each was upraised. And each of these *systems of mountains*, as he calls them, produced or accompanied some great catastrophe, destructive to a certain extent of the existing order of things.* This system of the French geologists has been confirmed and adopted by the scientific men of our own country. Professor Sedgwick and Mr. Murchison remark upon the phenomena observable in the isle of Arran, that they seem to prove the great

* "Revue Française," May, 1830, p. 55. See also his MS. communications to De la Beche, in his Manual, pp. 481, *seqq.* Carlo Gemmellaro informs us that at the scientific meeting at Stuttgard, in 1834, he read a paper proposing a modification of the theory, and restricting the elevation of mountain chains to small spaces. "Relazione sul di lui viaggio a Stuttgard." *Catania*, 1835, p. 12.

dislocations of the secondary strata to have been "produced by the elevation of the granite;" in which case, "the upheaving forces must have been in action some time after the deposition and consolidation of the new red sandstone." * But De la Beche is clearly of opinion that these successive elevations indicative of the convulsions which disturbed the quiet action of sedimentary depositions, may be further simplified by reference to one cause, that is, the power of a great central heat, variously breaking the earth's crust, whether by the progress of refrigeration, as he supposes,† or as the author of the theory imagines, by volcanic action.

Now it seems to me that this theory, by its beautiful unity in cause and action, is in perfect accordance with all we know of the methods used by divine Providence, which establishes a law and then leaves it to act: so that the budding forth of mountain chains should be the well-timed effect of causes, constant in rule, though irregular in action; just as much as the putting forth of the new germ is the yearly consequence of the same action of heat on the plant. But it seems, moreover, in the most striking harmony with the express declarations or explanations of the phenomena of creation recorded in God's word. According to these we learn that to limit the ocean within its bed, "the *mountains ascend*, and the valleys descend, into the place which God has founded for them; he has placed

* "Geolog. Trans." vol. iii. p. 34.

† Researches, p. 39.

(them) as a barrier which they (the waters) shall not pass nor return to cover the earth."* Again, the formation of mountains is spoken of as distinct from that of the earth. "Before the mountains were brought forth, or the earth was born." † Another remarkable passage seems graphically to describe the effects of this consuming principle: "Fire shall be kindled in my wrath, and it shall burn into the lowest abyss (grave, or hell); it shall eat the earth and its produce, and shall burn up the foundations of the mountains."‡ In which description, as in most that extol either the glory or power, the munificence or the severity, of the Supreme Being, the figures are most probably drawn from his actual works,—as Bishop Lowth has abundantly demonstrated.

But the discoveries of modern geologists have, as I have before suggested, also established a progressive series in the production of different races of animals, in evident accordance with the plan manifested to us in the six days' creation. Indeed, this approximation between the two has appeared to some so striking as to lead them to abandon the method I have explained, for reconciling the inspired record and modern science, and induce them to maintain that the two are in far more perfect accordance than I have hitherto asserted. If you will not agree with them in their hypothesis, you will at least have an opportunity of seeing that

* Ps. civ 8, 9. † Ps xc. 2. ‡ Deut. xxxi. 22.

"foreign geology" has no desire to destroy or controvert the Mosaic narrative.

Dr. Buckland truly observes, that learned men, upon grounds quite distinct from geology, have maintained the days of creation to signify long indefinite periods.* With the plausibility of this supposition I have nothing to do; philologically or critically I perceive no objection to it; but I do not deem it absolutely required. Still, admitting the hypothesis before given, that all which modern science demands is granted in the intermediate space between creation and the present arrangement of the earth, some longer period may be required than a day, if we suppose the laws of nature to have been left to their ordinary course; for then, some longer interval would have been requisite for the plants produced to be decked out as we must suppose them, with flower and fruit, and grown to their complete perfection, when man was placed among them. But it might please God to bring them forth at once, in all their grandeur and beauty, from the first instant of their production.

Cuvier first remarked that in the fossil animals of the primeval world there was a gradual development of organization, inasmuch as the lowest strata contained the most imperfect animals, molluscs, and shell-fish; after which come crocodiles, saurians and fish; last of all, quadrupeds, beginning with the extinct species whereof I have spoken.†

* "Vindiciæ Geologicæ." *Oxford*, 1820, p. 32.

† "Discours Prelim." p. 68.

Mr. Lyell, perhaps justly, denies the correctness of the consequence often drawn from this result, that "there is a progressive development of organic life, from the simplest to the most complicated forms;" * inasmuch as the discovery of one fish, or the bones of a saurian among the shells, is sufficient to derange the scale. But this observation noways clashes with the view which I am going to state; since every subsequent examination has, as far as I know, tended to confirm this succession of animals. For instance, in the very minute tabular arrangement given by Mr. Mantell, of the organic remains of Sussex, we find in the alluvial deposits, the stag, and other such animals; and in the diluvial, the horse, ox, and elephant; after these, proceeding downwards, we have fish and shells, and, in some formations, tortoises, and the different saurians I have before described. The bones of, what he at first supposed to be, a bird were discovered; but Professor Buckland considers it most probable that they belonged to a pterodactylus, or flying lizard.†

Assuming these premises, the authors, to whom I have alluded, suppose the days of creation to signify longer, and of course indefinite, periods; during which a certain order of animate beings existed; and they observe that the disposition of organic remains in strata corresponds exactly to the

* "Principles of Geology," vol. i. p. 145.

† "Geolog. Trans." vol. iii. pp. 200–216. Comp. Dr. Buckland, p. 220.

order in which their respective classes are, in the Scripture record, said to have been produced. An anonymous writer, last year, published a comparative table of this conformity, following, on the one hand, Humboldt's valuable work on the superposition of rocks, and the acknowledged succession of organic fossils on the other. In the lowest primitive, or as they are better called, unstratified rocks, as well as in the lowest order of the stratified, we have no traces whatsoever of vegetable or animal life; then we find plants mingled with fish, but more especially with shells and molluscs, as in the *grauwacke* group; thus indicating that the sea was the first to produce life, and bring forth its inhabitants; while the greater abundance of the inferior class, as shells, molluscs, etc., seems to indicate their prior existence to the more perfect tenants of the same element. Reptiles, or the monstrous creeping things before described, and connected with the occupiers of the air, through the flying lizard, are the next that appear, and are no less justly classed by the inspired historian as marine productions. Now at length the earth produces life, and accordingly we next find the remains of quadrupeds, of species, however, in a great measure no longer existing. They are found only in the latest strata, superior to those wherein the larger marine reptiles lie, such as the Paris fresh-water formation. Then at last come movable beds, in which, as at our next meeting will be more fully shown, exist the remains of genera now inhabiting the earth. With

the remains of each class are found sufficient marks of their having been swept from existence by some great catastrophe.*

This hypothesis and attempt to place in harmony the Jewish annalist with the modern philosopher may appear to many deficient in the precision requisite to establish so minute a parallelism. At any rate, it will serve to vindicate the cultivators of the science from the reproach of being unconcerned about the connection their results may have with more sacred authorities. And I will add, moreover, that many among those on the continent, so far from slighting the truth of that record, on the contrary, express a deep veneration for it, and their admiration of its wisdom, from seeing how their scientific pursuits do, in the manner I have rehearsed, appear to confirm it.

"We cannot too much remark," says Demerson, "this admirable order, so exactly according with the soundest notions which form the basis of positive geology. What homage ought we not to render to the inspired historian!"† "Here," exclaims Boubée, "we are met by a reflection which cannot fail to strike us. Since a book, written at a time when the natural sciences were so little advanced, contains nevertheless, in a few lines, the summary of the most remarkable consequences, at which it could not be possible to arrive otherwise

* "Annales de Philosophie Chrétienne," Aug. 1834, p. 132.

† "La Géologie enseignée en 22 lecons, ou histoire naturelle du globe terrestre." *Paris*, 1829, p. 408, comp. p. 461.

than by the immense progress made in the eighteenth and nineteenth centuries; since these conclusions are connected with facts, which were neither known nor even suspected at that time, nor ever had been till our days, and which philosophers have ever considered contradictorily, and under erroneous points of view; since, in fine, that book, so superior to its age in scientific knowledge, is equally superior to it in morals and in natural philosophy, we are obliged to admit that there is in that book something superior to man, something which he sees not, which he comprehends not, but which presses upon him irresistibly."*

Both the works which I have cited are of a popular and elementary character, written designedly to instruct youth, and persons of an inferior education, in the outlines of the science. And on this account I quote them more willingly; because they serve to show how the tendency of this study, on the continent, so far from being towards infidelity, is rather towards the confirmation, and even demonstration, of Christianity; and how foreign geologists, instead of directing their pupils to contemn the sacred books, as irreconcilable with their new pursuits, do, on the contrary, strive to gain fresh motives of respect and admiration towards them from the result of their researches.

* "Géologie élémentaire à la portée de tout le Monde." *Paris*, 1833, p. 66.

To the names already cited I might add many others,—as D'Aubuisson, Chaubard, Bertrand,—whose work, recently translated into English, has gone through six or seven editions in France, and Margerin, the outline of whose course, in the programme of the Université Catholique,* is eminently Christian.

These observations, too, must be doubly gratifying, when we consider the country whence they arise,—that which for years supplied Europe with crude and ill-digested materials for unreflecting minds to object against religion. But to those who know the better spirit which is now fermenting in the warm blood of many among its youth, who are apprised of the genial ardor of true patriotism, which cheers them on in the holy desire to blot that stain from their country's scutcheon, and to raise her as much by the new glory she shall shed around the cause of religion, as she has been shamed by her former enmity to it; to those who are acquainted with the sacred league tacitly existing among many, to devote their various and superior accomplishments and abilities to the defence, the illustration, and the triumph, of religion, under the secure guidance of the Church which they obey; to such as know these things, the authorities I have quoted are but small manifestations of a widely-extended feeling, mere leaves rising to the surface of the waters, to show the rich

* Paris, 1815, p. 57.

and luxuriant growth of vegetation, which their depths enclose.

And surely it must be gratifying thus to see a science, formerly classed, and not perhaps unjustly, among the most pernicious to faith, once more become her handmaid; to see her now, after so many years of wandering from theory to theory, or rather from vision to vision, return once more to the home where she was born, and to the altar at which she made her first simple offerings,—no longer, as she first went forth, a wilful, dreamy, empty-handed child, but with a matronly dignity, and a priest-like step, and a bosom full of well-earned gifts to pile upon its sacred hearth. For it was religion which, as we saw at the commencement of this lecture, gave geology birth, and to the sanctuary she hath once more returned. And how, our next entertainment shall yet further declare.

LECTURE THE SIXTH;

ON

THE NATURAL SCIENCES.

PART II.

SECOND point of contact between Geology and Scripture—the DELUGE.—1. Geological proofs of the existence of a Deluge—denudation of valleys; erratic block group; appearance of the Alps.—Huttonian theory.—Elie de Beaumont's application of his theory to the causes of the Deluge.—Animal remains: entire animals found in the North; Bone-caverns and osseous breccias. Objections.—2. Unity of the Deluge, proved by uniformity of effects. 3. Date of the Deluge. General impression produced from observation of facts.—Deluc's system of *chronometers*.—Deltas of rivers; progress of *dunes*. Judgment of Saussure, Dolomieu, and Cuvier.—Concluding remarks on the natural sciences.

IF we travel along some smooth and pleasant road, those objects which immediately surround us shall seem to us adverse to our course, and moving in the opposite direction. And these are mostly works of the hands of man, the hedge-rows perhaps which he hath planted, or the cottages and houses which he hath built. But if we cast our eyes be-

yond these, and gaze upon the handiwork of nature, upon the huge mountains which engird the horizon, or the majestic clouds which swim in the ocean of heaven, we shall see that they travel with us on our way, and that their course is onward even as our own. And thus methinks, it is with us in our pilgrimage towards truth. Men have hedged us round with the plantings of their own hands, or the devices of their own hearts; and if we look at these as we advance, we shall seem to be, as it were, in opposition and contradiction to the realities of things. But raise we our sight above and beyond these new and mortal creations, and when we shall contemplate and interrogate nature herself, in her primeval and enduring works, we shall find her through them travelling on the same road with us, and pointing towards the object of our desires.

Assuredly the science of geology hath already given you some proof, that so long as men piled up systems, they hindered those who would have gladly advanced towards the discovery of sacred truths; but that when the appearances of nature were fairly consulted, and simply delivered, they manifestly led to the wished-for conclusions. But, descending now to the second point to which I before alluded, as supposing a contact between sacred and profane researches, that is the Deluge, I think you will find the usefulness of this science much more plainly manifested. It is evident that if any traces of former events can be met upon the

earth, it needs must be that the last catastrophe which passed over its surface hath left the clearest footmarks of its course. The short duration of the deluge, and the convulsive nature of its destructive action, would allow no leisure for the slow operation of successive deposits, but must have left traces rather of a disturbing than of a shaping power, of removal, dislocation, and transport, of a scooping and furrowing tendency, rather than of a formative and assimilating agency. We should expect to trace its course now, as we follow in summer that of a winter torrent, rather than as we discover the bed of a dried-up lake; by the fragments it tore from its banks, by the wearing action it exercised on the mountain's flank by the accumulation of loose materials; where its eddies were the strongest perhaps by the fragments of more valuable spoil, by the remains of those plants and animals, which as it burst over its ordinary limits, it swept from their natural haunts into its gulf. The universality of its action would produce such a uniformity in its effects, as would identify them through tracts placed at a considerable distance from one another; so that the ocean-torrent, issuing from the opened flood-gates of the abyss, would mark its ravages in a similar direction in the American and in the European continent. It must be, doubtless, difficult to fix the era of such a scourge over tracts which many centuries of vegetation have covered with their yearly tribute of decay, which the hand of man has industriously broken up, or otherwise al-

tered; which the wearing and defacing corrosion of time has smoothened and disguised; and which a series of minor and local catastrophes have, from time to time, materially deranged. Yet, in spite of all these altering causes, there may be time-marks, either in the state of the ruins which the last devastation left, or in the effects of progressive agencies, which can only date from it, sufficient to guide us to, at least, a vague and approximating calculation of the epoch at which it occurred.

In examining the light which modern geology has cast upon these three points,—the existence, the unity, and the date of a deluge, or devastation of the world by water,—I shall chiefly follow as my text, the summary given, in a few lines, by Dr. Buckland, at the conclusion of his *Vindiciæ Geologicæ*, and afterwards repeated in his *Reliquiæ Diluvianæ*.* Indeed, it will be this work which I shall have principally in my eye, in the compendious view I shall endeavor to present you, of what modern geology has decided regarding the physical evidences of this catastrophe.

The first phenomenon which, we may say, was justly observed and proposed, as giving proof of a sudden and complete inundation, such as the deluge supposes, is that which is known in modern works by the name of *valleys of denudation*. Catcott, in his work on the deluge, was the first to notice it; but it has received much more accu-

* "Vindiciæ," p. 36. "Reliquiæ *Lond.* 1823, p 226.

rate attention since his time. By this term are understood—valleys enclosed between hills, the strata of which correspond exactly so that the valley has evidently been scooped out from their substance. To explain this by a familiar illustration; if you discovered, among the ruins of this city, fragments of wall, recurring at intervals, and standing in the same line, and if, upon minuter examination, you ascertained that the different portions were built of the same materials, in precisely the same order, so that, for instance, rows of brick, tavertine, and tufa, succeeded one another at equal intervals throughout, and with corresponding dimensions, assuredly you would conclude that the different fragments had originally formed one continuous wall, and that the breaches interposed were the result of time or violence. Precisely the same line of reasoning must lead us to conclude that the valleys, which have manifestly cut the hills in two, have been excavated in them by some agency equal to the effects. Dr. Buckland has been particularly successful in the examination of this appearance, on the coast of Devon and Dorset, of which he has given illustrative plates. From these, as well as from his description, it appears that the entire coast is cut by valleys running towards the sea, dividing the strata of the hills, so that they tally one with another. On the sides of these valleys are accumulations of gravel, manifestly deposited on the slopes of the hills, and at the bottom of

the gorge, by the excavating cause. This cannot have been any agent now in operation, for no river runs through many of them; and in the gravel thus deposited are found the remains of animals, such as would be destroyed by a sudden flood in the present order of creation.* Similar examples might be brought from the essays of other geologists.

To this class of proofs I may refer another singular appearance, which seems attributable to the washing away, by water, of the sides of mountains. I allude to those huge pinnacles of granite, or other hard rock, which seem to stand detached and insulated from the neighboring mountains. Mount Cervin, in the Vivarais, presents a pyramid 3,000 feet high upon the loftiest Alps, and is thus commented on by Saussure: "However keen a partisan I am of crystallization, it is impossible for me to believe that such an obelisk issued directly from nature's hand, in this shape. The surrounding matter has been broken off and swept away; for nothing is seen around it but other pinnacles, springing like it abruptly out of the ground, with their sides, in like manner, abraded by violence." At Greiffenstein, in Saxony, are a number of granitic prisms, standing upon a plain, and rising to the height of a hundred feet, and upwards. Each of these is again divided, by horizontal fissures, into so many blocks; and thus they

* "Reliquiæ,' p. 247. "Geolog. Trans." vol. i. p. 96.

present the idea of a great mass of granite, the connecting parts of which have been violently torn away.*

Another class of phenomena which gives the same results, may be justly comprehended in the term proposed by De la Beche, the *erratic block group*.† Dr. Buckland had before proposed a distinction between *alluvial* and *diluvial* formations; understanding by the former, those deposits which tides, or rivers, or other existing causes, make in their ordinary action, and by the latter, those which seem due to the agency of a more powerful cause, than any now at work—such as a vast and overwhelming inundation. The constituents of this class may be reduced to two: first, deposits of sand or gravel, where no water now acts, or could well have acted, in the present order of things; and secondly, those larger masses, varying from some inches in diameter to the weight of many tons, technically denominated *boulder stones*. These, when small, are generally intermixed with the gravel; but often they surprise us with their huge masses, standing insulated and alone, on the side of a mountain, so as to verify the beautiful description of the poet—

> "As a huge stone is sometimes seen to lie
> Couched on the bald top of an eminence,
> Wonder to all who do the same espy,

* Saussure, "Voyage dans les Alpes," tom. iv. p. 414. Ure "New System of Geology," *Lond.* 1829, p. 370.

† Page 181.

> By what means it could hither come, or whence;
> So that it seems a thing endued with sense,
> Like a sea-beast crawled forth, that on a shelf
> Of rock or sand reposeth, there to sun itself."
>
> WORDSWORTH.

De la Beche has paid particular attention to the circumstances in which deposits of gravel occur, and shows them to be incompatible with the theory—that actual causes have produced them. Thus, we often find that the strata have been broken into what is called a "fault," over which the transported gravel lies quiet and undisturbed, thus showing that a different action deposited it there, from that which caused the fracture of the strata. In like manner, wherever it has been possible to examine the ground under these deposits, we find the rocks, however hard, scored in furrows, as if a vast current, bearing heavy masses along, had passed over its surface. Upon these facts he reasons thus: "Our limits will not permit greater details, which would require the necessary maps; but it would go far to support the supposition, that masses of water had passed over the land. Confining our attention to one district, it should be observed that the dislocations are far greater, and the faults, evidently produced at a single fracture, far more considerable than we can conceive possible from modern earthquakes. It is not, therefore, unphilosophical to infer that a greater force, causing vibrations and fractures of the rocks, would throw a greater

body of water into more violent movement, and that the wave or waves, bursting upon the land or acting upon the bottom, at comparatively small depths, would have an elevation and destructive sweeping power, proportioned to the disturbing force employed.

"The next question that will arise is, are there any other marks of masses of water passing over the land? To this it may be replied, that the forms of the valleys are gentle and rounded, and such as no complication of meteoric causes, that ingenuity can imagine, seems capable of producing: that numerous valleys occur on the lines of faults, and that the detritus is dispersed in a way that cannot be accounted for by the present action of mere atmospheric waters."*

Dr. Buckland has minutely traced the course of quartzose pebbles, from Warwickshire, to Oxfordshire and London, in such a manner as to leave no doubt that they have been carried down by a violent rush of waters from north to south. For, when we first meet them, in the neighborhood of Birmingham and Lichfield, they form enormous beds, subordinate to the red sandstone. Thence they have been swept downwards, chiefly along the valleys of the Evenlode and Thames, mixed with fragments of rock existing in York-

* Page 184. In the first edition, the learned author is more explicit, as he used the word "deluge," where now he has, "masses of water," in the beginning of the second paragraph.

shire and Lincolnshire, but nowhere *in situ* near the places where the pebbles are now found. The quantity decreases in proportion as we recede from their original bed; so that in Hyde Park, and the Kensington gravel-pits, they are less abundant than at Oxford. But these transported pebbles, being found on the heights which line these valleys, it would appear a natural conclusion that the same cause which brought them hither, also excavated the valleys: though, according to the learned professor's supposition, rather in its retreat than in its first advance. The sufficiency of this one action to produce all the effects affords, surely, a strong ground for adopting his hypothesis.*

De la Beche found on the top of Great Haldon hill, about 800 feet above the sea, pieces of rock, which must have been derived from lower levels. "I there found," he adds, "pieces of red quartziferous porphyry, compact red sandstone, and a compact siliceous rock, not uncommon in the grauwacke of the vicinity, where all these rocks occur at lower levels than the summit of Haldon, and where certainly they could not have been carried by rains or rivers, unless the latter be supposed to delight in running up hill." Dr. Buckland collected, in the county of Durham, within a few miles of Darlington, pebbles of more than twenty varieties of green-stone rock and slate, which occur

* "Reliquiæ," p. 249.

nowhere nearer than the lake district of Cumberland; and one block of granite in that town cannot have come from any nearer place than Shap, near Penrith. Similar blocks are found also on the elevated plain of Sedgfield, on the south-east of Durham. The nearest point from which these blocks and pebbles could have been derived, is the lake district of Cumberland, from which they are separated by the heights of Stainmoor; and if it be thought too great a difficulty to suppose them brought thence, the only choice is to give them a Norwegian origin, and suppose them transported from beyond the present sea. Mr. Conybeare has remarked, that it would not be difficult to collect almost a complete geological series of English rocks in the neighborhood of Market Harborough, or in the valley of Shipton-on-Stour, from the rolled fragments and boulders which there occur. Professor Sedgwick has observed that the boulders accompanying the detritus, or gravel, in Cumberland, must come from Dumfriesshire, and consequently have crossed Solway Frith. Still more striking is the discovery of Mr. Phillips, that the *diluvium* of Holderness contains fragments of rocks, not only from Durham, Cumberland, and the north of Yorkshire, but even from Norway; and similar fragments of Norwegian rocks are said to exist in the Shetland islands. The same writer gives a singular phenomenon of this sort. In the valley of the Wharf, the substratum of slate is covered with a stratum of limestone, on the top

of which, 50 or 100 feet above, we find huge transported blocks of slate in great abundance; farther on the scars, to an elevation of 150 feet, the blocks are still more numerous. They appear to have been driven up, at a particular place, by a current, towards the north, and afterwards carried along the surface of limestone.* So that here we have a manifest deposition of limestone upon the slate, and then a violent transportation of blocks of this rock, over the surface of the deposit.

On the Continent precisely the same appearances are observed. In Sweden and in Russia large blocks occur, with every evidence of their having been borne from north to south; Count Rasoumousky observes that those between St. Petersburg and Moscow come from Scandinavia, and are disposed in lines from N. E. to S. W. The erratic blocks from the Duna to Niemen are attributed by Professor Pusch to Finland, Lake Onega, and Esthonia: those of Eastern Prussia and part of Poland belong to three varieties, all found in the vicinity of Abo, in Finland.† In America, appearances are precisely the same. Dr. Bigsby, describing the geological appearances of Lake Huron, observes: "The shores and bed of Lake Huron appear to have been subjected to the action of a violent rush of waters, and floating substances rushing from the north. That such a

* "Geol. Trans." vol. iii. p. 13.

† De la Beche, *ubi sup.* Buckland, "Reliquiæ," p. 192 *seqq*

flood did happen, is proved, not only by the abraded state of the surface of the northern mainland, and scattered isles of the Manitouline range, but by the immense deposits of sand, and rolled masses of rock, which are found in heaps at every level, both upon the continent and islands; since these fragments are almost exclusively primitive, and can in some instances be identified with the primitive rocks *in situ* upon the northern shore; and since moreover the country to the south and west is secondary to a great distance, the direction of this flood from the north seems to be well attested."*

It is just, however, to notice the hypothesis maintained with so much acuteness and learning by some very able modern geologists, that all these phenomena can be explained by causes actually in operation. Fuchsel was the first who made this assertion, which may be said to have afterwards formed the basis of the Huttonian theory. This, like many other philosophical sects, owes its celebrity more to its disciples than to its founder; and Playfair and Lyell have certainly done all for its support which a vast accumulation of interesting facts, and a most ingenious train of reasoning, can effect. The latter, in particular, must be acknowledged to have added immensely to the collection of geological observations. According to this theory, all valleys have been excavated by the rivers or rills which run through them; whatever

* "Geolog. Trans." vol. i. p. 205.

requires a convulsive agent is attributed to earthquakes, of the character and extent now witnessed; all transport of rocks or gravel may have been effected by tides, or rivers, or torrents, or floating icebergs. Opposed to this theory are, of course, the authors I have quoted, and most others of eminence in geology. Brogniart, for instance, confutes that portion of it which attributes so strong a cutting power to water, as to suppose deep glens and ravines to have been eaten through rock, by the action of a stream. The rich vegetation of mosses upon the surface of the rocks, at and below the water's edge, proves that the rock on which they grow is not constantly worn away; for, if so, they must be as constantly swept away with their hard bed. The Nile and Orinoco, in spite of the immense force which their volume gives them, when they come to a barrier of rock which intercepts their course, so far from wearing it out, only cover it with a rich brown varnish of a peculiar nature.* Greenough has observed that the action of rivers tends rather to fill up than to excavate valleys, inasmuch as they rather raise their beds than dig deeper channels. For it is proved by observation, in digging pits by their sides, that the sedimentary deposit goes deeper than their beds. "The action of rivers," he continues," may consist either in filling up or in scooping out; it cannot consist in both; if in scooping out, they have not formed those beds

* "Dictionnaire des Sciences Naturelles," vol. xiv. p. 55.

of gravel; if in filling up, they have not excavated the valley."* The transport of gravels and boulders to such immense distances, and such great heights, can no more be accounted for by existing causes. For it has been observed that even rivers, unless exceedingly strong, do not carry their pebbles to any distance; as different parts of their course will be found paved with pebbles of various sorts. It has been thus calculated, that for any Alpine torrent to carry some of the blocks, scattered at the foot of that chain, we must give it such an inclination as would place its source above the line of the perpetual snows. The boulder rock, called Pierre-à-Martin, contains 10,296 cubic feet of granite: another, at Neufchatel, weighs 38,000 cwt. At Lage is a block of granite, called the Johannisstein, twenty-four feet in diameter. An enormous boulder stone, on the shore of Appin, in Argyleshire, has been described by Mr. Maxwell as being a granite compound, of an irregular form, but having its angles rounded with a vertical circumference of forty-two feet, and a horizontal one of thirty-eight. Numerous other granite boulders occur in the same part of Scotland, but no granite is there *in situ*, from which it can be derived.†

Before quitting this subject of rolled blocks, I must not omit the peculiar appearance they present

* "Critical Examination of the First Principles of Geology." *Lond.* 1819, p. 139.

† "Geolog. Trans." vol. iii. p. 488.

at the Alps. This has been particularly examined by Elie de Beaumont and, later, by De la Beche. It is precisely what we should suppose would have been produced by the rush of a current of water through the valleys, bearing with it fragments of the mountains by which it passed, and filling up entire hollows with the ruins it bore down. Where an escarpment, or projecting ledge, obstructed it, it deposited a greater accumulation of materials; nearer the place whence the blocks were torn, they are larger, whereas they diminish in size, and become more worn by friction, as they recede.

The geologist whom I have so closely followed puts the question, how far the distribution of blocks from the Alps may have been contemporaneous with the supposed transport of erratic fragments from Scandinavia? To this, after a preliminary caution, he replies, "that the blocks in both cases appear to a certain extent superficial, and uncovered by deposits which would afford us information respecting their difference of age; and that it is possible a great elevation of the Alps, and distribution of blocks on both sides of the chain, may have been contemporaneous, or nearly so, with a convulsion in the North."* In another work he enters somewhat more fully into the distinction between these two great distributions of blocks, the Alpine and the Northern, both of which he considers attributable to a comparatively recent period. "How far,"

* "De la Beche," p. 194.

he writes, "the events which have produced both accumulations of these blocks may have been separated by time from each other, we know not; but we are certain that the geological epochs of both must have been very recent, since they both rest on rocks of little comparative antiquity." Afterwards he infers, from the phenomena observed in Europe and America, that some cause situated in the polar regions had so acted as to produce this dispersion of solid matter over a certain portion of the earth's surface. We know of no agent capable of causing the effect required, but moving water.* This author considers that the same simple cause proposed by M. de Beaumont, to account for all the preceding revolutions on the earth's surface, will likewise explain this latest one. An elevation of the land under the polar seas would drive the ocean southward over the continents, with a force proportioned to the intensity of its action.

Here, once more, I must observe that we have another proof, that, far from the tendency of many continental geologists being to incredulity, they, on the contrary, display an anxiety so to frame their hypothesis as that the Scripture narrative shall be embraced by it, and that their solution of the great geological problem shall in part be verified, by its including so great an historical fact as is there recorded. For Elie de Beaumont observes, at the conclusion of his *Researches*, that the elevation of a chain of mountains, while it produced the

* "Researches in Theoretical Geology," p. 390.

violent effects he had described, on the countries in its immediate neighborhood, would cause, in more distant ones, a violent agitation of the sea, and a derangement of their level; "events comparable to the sudden and passing inundation, of which we find an indication, with almost uniform data, in the archives of all nations." He then adds, in a note, that, looking at this historical event merely as being the last revolution on the surface of the globe, he should be inclined to suppose that the Andes were elevated at that period; and from their elevation, all the effects concurrently necessary to produce a deluge, might be explained.*

I come now to another great and far more interesting topic, but one on which I enter with considerable hesitation, in consequence of the various hypotheses and conflicting opinions connected with it—the remains of animals, discovered in different parts of the world, under circumstances extremely varied. I before observed, that in the superior, or more movable, strata, such as we may suppose to have been deposited during a temporary submersion of the earth under a violent and impetuous rush of waters, are found the bones or bodies of animals, belonging, in most cases, to genera now existing, though in species sometimes differing from them. Judging by analogy, we should conclude that these were deposited in their present situa-

* *Ubi sup.* and "Annales des Sciences Naturelles," tom xix. p. 232.

tions by the last convulsion which agitated the globe, since there is no trace of any other having passed over them; and it seems hardly possible to doubt that water was the agent employed for preserving them in so remarkable a manner.

Dr. Buckland may be considered as having exhausted this subject, up to the period of his publication on diluvian remains; and the discovery, since his work, of later entombments may seem, with a few exceptions, of some moment, which I will presently notice, to have only presented repetitions of the phenomena he had observed, and confirmed many of his conclusions.

The remains of animals superficially discovered may be classified in three divisions: first, those which are found entire, or nearly so, in the northern regions, to which must be joined such as, from similarity of situation, are to be accounted for by a similiar hypothesis; secondly, those found in caverns; thirdly, those which exist in what is called *osseous breccia*, or mixed with gravel or detritus, in the fissures of rocks.

In the first class, then, we may include, primarily, the carcasses of elephants and rhinoceroses found in ice, or, perhaps more properly, in frozen mud, in the northern latitudes. In 1799, Schumachoff, a Tungusian chief, observed a shapeless mass in the ice, on the peninsula of Tamset, at the mouth of the Lena; in 1804 it became detached, and fell on the sand. It was found to be an elephant, so entire, that the dogs, and even the men, partook

of its flesh. The tusks were cut off and sold, and the skeleton, with some of the hair, was conveyed to the imperial museum at St. Petersburg, where it is still preserved. A rhinoceros, described by Pallas, in 1770, as discovered in the frozen mud on the banks of the Viluji, was likewise covered with skin and hair.* The expedition of Captain Beechey into the north of Asia has brought to light a number of similar discoveries, as the bones of these two animals have been there found in considerable numbers, encased in frozen sand.† The animals thus found have been considered as belonging to different species from those now existing, chiefly in consequence of the hairy coat with which they were covered. Perhaps, however, the variety may go no further than is traceable in well-known animals, which in some countries have the skin quite, or nearly, bare, while in others they are shaggy—such as the dog, the hairless variety of which is well known. Mr. Fairholme has quoted a passage from Bishop Heber's narrative, showing the existence of some elephants covered with hair, in India, at the present day;‡ and maintains that experience proves the tendency of the elephant to become hairy, in colder climates. However, placing this point aside, it cannot be

* See the "Mémoires de l'Academie Impériale de St. Petersb." vol. vii.

† See the Essay on this subject by Professor Buckland, at the end of Captain Beechey's narrative.

‡ *Ubi sup.* p. 356.

doubted that these animals must have been surprised by some sudden overwhelming catastrophe, which destroyed and embalmed them in one and the same moment. It is quite foreign to our purpose to inquire whether these animals were inhabitants of the country where they now lie buried; and, if so, how they lived in so cold a climate; or whether, on the other hand, the climate has undergone a change. It does, indeed, seem most probable that they lived and died where they now lie, instead of having been transported thither; and that the climate must have undergone such a modification as renders it no longer a fit temperature for animals which before could not only endure it, but found, in its vegetation, their necessary sustenance. This change, too, must have been so sudden, at least to all appearances, as to have allowed no time for decomposition; but a sudden cold must have frozen the animals, almost as soon as dead. How all this can have happened, is a matter of system and conjecture; but assuredly it is nowise inconsistent with the idea of a scourge, intended not only to sweep all life from the earth, but also to complete the original curse, by causing such modifications of climate, or other influential agents on vitality, as should reduce the immense longevity of mankind, from the antediluvian to the patriarchal term.

Whatever difficulties therefore there may be yet unsolved in the class of phenomena I have explained, it is evident that, so far from standing in

opposition to the character of the last great revolution, they appear on the contrary better explicable by admitting it, than by any other hypothesis. And hence Pallas owns "that, until he had explored these parts, and witnessed such striking monuments, he never had persuaded himself of the truth of the deluge."*

The second class, comprising the bones of animals preserved in caverns, possesses greater interest than the first. To enumerate all the situations where these sepulchres of the early world are found, whether in England or on the continent, would greatly exceed the limits I must keep; I will therefore content myself with giving you a general idea of them, from Buckland's accurate description. The one which first excited very general attention, was that of Kirkdale, in Yorkshire. It was discovered in a quarry in 1821, and presented a very small opening through which a man was obliged to creep. The floor was covered superficially with stalagmite, or the calcareous deposit formed by water, dripping from the roof. Under this was a rich loam, or mud, in which were encrusted the bones of a variety of animals and birds. By far the greater quantity of teeth belonged to the hyæna, and among them were specimens indicating every age. In addition to these, were bones of the elephant, rhinoceros, bear, wolf, horse, hare, water-rat, pigeon, lark, etc. Besides other evidences of this cavern having been

* "Essai sur la Formation des Montagnes."

the lair of hyænas through successive generations, the bones were almost without exception in a state of comminution, splintered and broken, with the exception of such hard, solid bones as would best resist the action of the teeth. There were in fact tooth-prints, if I may say so, upon many of the bones, which were found exactly to correspond with the teeth of the hyænas discovered in the cave. By comparing these traces with the actual habits of these animals, by examining the extent and character of the accumulation, and taking into account the position and accessories of the cavern, Dr. Buckland comes to the interesting conclusion, that it must have been for ages the haunt of hyænas, which dragged in the bones of the animals they had slaughtered, and cranched them there at leisure; and that an irruption of water carried into the cavern the loam in which they are now imbedded, and which has preserved them from decay. Such a conclusion exactly accords with the character of the deluge.* This description may, in the main, be considered applicable to the other most celebrated caverns, such as those of Torquay, Gailenreuth, Külock, etc., though it is observable that in the German caverns the bones of bears chiefly predominate.

The facts expounded by Professor Buckland are admitted by all to have been observed with scrupulous exactness, and detailed with perfect

* "Reliquiæ," pp. 1–51.

impartiality; his reasoning, however, and conclusions, have not escaped criticism. Mr. Granville Penn, in particular, has attacked the whole of his explanation with considerable earnestness and ingenuity, and maintained that the bones must have been washed into the cavern by the flood, which caught them up in the neighborhood, and forced them through the narrow opening in the cliff. As he, however, agrees in the most important points, that is, that here we have a strong evidence of the deluge, it is unnecessary to go into his arguments. It may be sufficient to say, that geologists have not been gained over by his reasoning: and that Cuvier, Brogniart, and others, have continued to retain Buckland's explanation.

But there is another more important question, which, perhaps, could not be so easily solved when the learned professor published his interesting account. Have human bones been discovered, so blended with the remains of animals, that we may conclude man to have been subject to the action of that catastrophe which swept these from existence? Certainly the instances which could come under his observation were such as to justify the conclusion to which he came, that wherever human bones had been discovered, mixed with those of animals, they had been, introduced into the cavern at a later period. But there appear to be one or two instances rather varying in circumstances from these examples.

The cave of Durfort, in the Jura, was first

visited in 1795 by M. Hombres Firmas, who did not, however, publish any account of it till he had examined it again, twenty-five years later. His essay appeared under the title of *Notices sur des Ossemens Humains Fossiles.* In 1823, M. Marcel de Serres published a more detailed account of it. The cavern is situated in a calcareous mountain, about 300 feet above the level of the sea, and entered by a perpendicular shaft 20 feet deep. Upon entering the cavern from this shaft, by a narrow passage, there is a space three feet square. containing human bones, incorporated, like the Kirkdale remains, in a calcareous paste.*

But a still more accurate observation, accompanied with the same results, has been made by M. Marcel de Serres upon the bones found in the tertiary limestone at Pondres, and Souvignargues, in the department of the Hérault. Here M. de Cristolles discovered human bones and pottery, mixed with the remains of the rhinoceros, bear, hyæna, and many other animals. They were imbedded in mud and fragments from the limestone rock in the neighborhood. Under this accumulation, in some places as thick as thirteen feet, is the original floor of the cavern. The human bones were found, on a careful analysis, to have parted with their animal matter as completely as those of the hyæna which accompanied them. Both are equally brittle, and adhere as strongly to the

* "Granville Penn's Comparative Estimate of the Mineral and Mosaical Geologies," 2nd edit. 1825, vol. ii. p 394

tongue. To assure themselves of this point, MM. de Serres and Ballard compared them with bones extracted from a Gaulish sarcophagus, and supposed to have been buried fourteen hundred years; and the result was, that the fossil bones must be much more ancient.*

In this instance, however, the discovery of pottery makes it possible that the human bones may have been later introduced. For while, on the one hand, we cannot suppose men to have tenanted the same cavern with hyænas, on the other, we cannot imagine that these animals, however they might have indulged their bone-devouring propensities at the expense of man, would have introduced his pottery into their haunts, or tried their teeth upon it. Accident, therefore, or design, may have entombed some later inhabitant of the neighborhood in the more ancient dwelling of the wild beast; though we must still account for the human bones being kneaded up in the same paste as the others. In either hypothesis, however, we have apparently a satisfactory proof that a violent revolution, caused by a sudden irruption of water, destroyed the animals which inhabited the northern parts of Europe; and the corresponding phenomena in the southern parts, corroborated by similar discoveries in Asia and America, show that its influence extended farther still. In the middle of the last century, some human bones were said to

* "Lyell," vol. ii. p. 225.

have been found encrusted in a very hard rock, and were considered evidence of diluvial action.*

The third class of animal remains which I mentioned, consists of the osseous breccia, as it has been called, found generally in the fissures of rocks, or even in large caverns. It is formed of bones strongly cemented together, and with fragments from the surrounding rocks. De la Beche has minutely examined that which is found in the neighborhood of Nice; and Dr. Buckland has collected particular details of that discovered at Gibraltar.† This species of incorporation is generally considered to have different dates, in different circumstances; but some of it may, perhaps, be pronounced as contemporary, in its formation, with the other deposits I have described.

And here I close the first part of my argument, or rather of my statements, regarding the latest conclusions of geology, on the subject of the last revolution, which disturbed the surface of the earth. But before proceeding further, I must meet a difficulty which may easily be raised. There are many and very learned geologists, who attribute several of the phenomena I have described to

* "A very curious and particular account of some skeletons of human bodies discovered in an ancient tomb, translated from the French; as also a circumstantial account of some petrified human bodies found last February standing upright in a rock." *Lond.* 1760. See the letter at the end of the work.

† "Geolog. Trans." vol. iii. p. 173. "Reliquiæ," p. 156.

older revolutions than the great cataclysm or deluge, described in Scripture; nay, some perfectly sound writers distinguished the geological deluge from the historical, which they consider only a partial inundation;* and ascribe to the former all the appearances I have explained.

To these reflections I would variously reply. First, I would say that the discovery of human bones must ultimately decide this point; for, if they can be proved to exist in similar situations, or under the same circumstances, as those of the animals in caverns, we must assume the cause of their destruction to be what history describes. For if this, whether sacred or profane, represents men and animals as swept from existence by an inundation of waters, and if geology exhibits the effects of precisely such a catatsrophe, and gives therewith evidence that no later revolution has happened, it would be most unphilosophical to disjoin the two. For their concurring testimony is like that of a written document, with a medal or other monument; just as the triumphal arch which commemorates Titus's victory over the Jews, by the representation of their spoils, though without a date, will be referred, by every sensible man, to the conquest, so minutely described by Josephus.

But suppose it should be *proved* that all the phenomena I have described belong to an earlier era, should I regret the discovery? Most assuredly

* "Boubée," p. 43, cf. p. 203.

not: for never should I fear, and consequently never should I regret, any onward step in the path of science. Should it be possible to discover an accurate system of geological chronology, and should any of these appearances be shown to belong to a remoter epoch, I would resign them without a struggle; perfectly sure, in the first place, that nothing could be proved hostile to the sacred record; and in the second, that such a destruction of the proofs which we have here seen, would only be a preliminary to the substitution of others much more decisive. Who regrets, for instance, that Scheuchzer's *Homo diluvii testis*, or man who bore witness to the deluge, should have turned out to be only part of an animal of the salamander genus? He, indeed, thought it a most important proof; but surely no lover of truth can be sorry that it should have been detected, or can repine that its weak evidence should have been replaced by the co-ordinate facts which I have brought together. "The Christian religion," says Fontenelle, "has at no time needed false proofs to aid its cause; and this is still more the case now, from the care which the great men of this age have taken to establish it on its true foundations, with greater strength than the ancients had done. We should be filled with such a just confidence in our religion, as will make us reject false advantages, which another cause might not neglect."* What-

* "Histoire des Oracles," p. 4, ed. *Amst.* 1687.

ever we may think of the opinions of this writer, his judgment of our sincerity in that reliance which we place upon our cause is perfectly correct. I will further add, that I am only the historian of this and other sciences, viewed in reference to the Christian evidences; I have only, in general, to record the opinions of men learned in their respective pursuits, comparing the past with the present. The ground is constantly changing under our feet; and we should be contented with any science, if its progressive development shall be proved, by experience, favorable to a holier cause.

We come now to the interesting inquiry, how far geological phenomena tend to prove the oneness of this catastrophe; in other words, whether recent observations lead us to suppose a multiplicity of local inundations, or one great scourge, upon an awfully magnificent scale. Now, in answer to this, I will say that appearances indicate the latter case.

For, in the first place, you cannot have failed to remark that in the sketch I gave you of the course which the rolled blocks and drifted matter must have taken, they present an almost uniform direction from north to south. The boulders of Durham and Yorkshire are from Cumberland, those of Cumberland from Scotland, those of Scotland from Norway. Pebbles from the same country are found in Holderness; and the valley of the Thames is supplied with them, disposed in the

form of torrent beds, from near Birmingham. On the continent it is the same; for the erratic blocks of Germany and Poland are traceable to Sweden and Norway. Brogniart has also remarked that they run in parallel lines from north to south, sometimes slightly varying a little in direction, but always in the main presenting the appearance of having been borne downwards from the north by an overpowering current. You will remember, too, how Dr. Bigsby's observations showed him that the detritus in North America came always from points farther to the north. In Jamaica, the same course seems observable. For De la Beche notices the great plain of Liguanea, upon which Kingston is situated, as being "wholly composed of diluvial gravel, consisting principally of the detritus of the Saint Andrew's and Port-Royal mountains, and evidently produced by causes not now in action, but derived from those mountains in the same manner, and probably at the same period, with the numerous tracts of European gravel, which have resulted from the partial destruction of European rocks." Now, these mountains are to the north of the plain. Again, the plain of Vere and Lower Clarendon is diluvial, and its materials seem derived from the trap districts among the St. John's and Clarendon mountains, which are situated towards the north.*

* "On the Geology of Jamaica."—Geol. Trans. vol. ii. pp. 182, 184.

This coincidence of direction in the course pursued by the ocean-current in such remote parts of the world, whether we measure their distance from north to south, or from east to west, seems to indicate clearly the operation of a uniform cause. For, if we suppose the sea to have broken in upon the land at different periods, it might be at one time, for instance, the Baltic, at another the Mediterranean, at another the Atlantic; and in each case the direction of the scourge, as evinced by its traces, would be naturally varied. Whereas, at present, not only is the admission of one only deluge the simplest, and consequently the most philosophical, explanation of these constant and uniform phenomena, but a variety of such catastrophes can hardly be admitted, without supposing that each must have disturbed the effects of the preceding; so that we should have crossing lines of drifted matter, and varied directions in the rolled masses to disturb every calculation. Yet nothing of this sort has been discovered in tracts hitherto explored; and, therefore, sound science should conclude that the cause was only one. Nor would this reasoning be much impaired, should subsequent investigation in more distant countries lead to different results. For we must naturally suppose that other oceans, besides the northern, were sluiced out upon the earth to produce its last great purgation; and from them the lines of drifted masses would point in another direction.

If the track of these transported materials

show a uniform direction, we may expect the road over which they travelled to be worn in a corresponding manner. The first to notice this appearance, as I have already mentioned, was Sir James Hall, who observed, that in the neighborhood of Edinburgh the rocks are marked with ruts or lines, apparently scooped out by the passage of heavy rolled masses, in the direction from east to west. Sir R. Murchison has minutely described the same appearance in the Brora district, in Sutherlandshire. "I remarked," he observes, "in my former paper, that these hills probably owe their origin to denudation; which supposition is now confirmed by the exposure on their surface of innumerable parallel furrows and irregular scratches, both deep and shallow—such, in short, as can scarcely have been produced by any other operation than the rush of rock-fragments transported by some powerful current. The furrows and scratches appear to have been made by stones of all sizes, which (with the occasional exception of lines slightly diverging, probably occasioned by the smaller pebbles coming forcibly in contact with the larger) preserve a general parallelism, with a direction from N.W. to S.E." * This coincidence is certainly remarkable, and leaves little room to doubt the unity of the cause, which produced such uniform results.

I will not dwell upon the coincidence of other

* 'Geol. Trans." vol. ii. p. 357.

appearances, as the similarity of distribution in the *diluvium*, and its organic remains, in different parts of the world; for the remarks I have already made will suffice to show you, that the probabilities are greatly in favor of one single cause having produced them all. Neither shall I detain you upon another important conclusion, resulting manifestly from all that has been said, that the last inundation was not, like the supposed preceding ones, a long submersion under the sea, but only a temporary and passing flood, just such as the Scriptures describe it. That the land previous to it was, in part at least, the same as now, is apparent from the hyæna caverns: that it was only for a limited period under water, appears from the absence of all such deposits as suppose solution; for its sediment is composed of loose materials, gravels, breccias, and mingled *débris;* such as a river or sea, on a gigantic scale, might be supposed first to take up, and then to leave behind it.

We come at length to another still more interesting question: Does geology give any data towards ascertaining, with tolerable precision, the era of this last revolution? To this I think we may safely reply—and some of the authorities quoted expressly say it—that the general, and, if you please, vague impression produced upon accurate observers, by geological facts, is, that the last visitation is of comparatively modern date. The earth's surface presents the appearance of having been but lately moulded, and the effects of causes

in actual operation appear but small, unless restricted to a very limited period. Thus, if we look at the trifling accumulation of rubbish, or fragments, which surrounds the foot of lofty mountain chains, or at the small progress made by rivers in filling up the lakes through which they pass, in spite of the mud they daily and hourly deposit, we are necessarily driven to acknowledge that a few thousands of years are amply sufficient to account for the present state of things.

But an attempt has been made to proceed in this investigation, with far more approximative accuracy, by measuring the periodical effects of such causes as I have incidentally mentioned, so to determine, with some precision, the length of time which must have elapsed since first they began to act. Deluc was the first who took some pains to observe and collect such data, to which he gave the name of *chronometers*. He has, indeed, been severely lashed for his attempt, by writers of an opposite school;* and yet it is but fair to remark that his conclusions, and even in great measure their premises, were adopted by Cuvier, whose sagacity and immense geological knowledge few will attempt to impugn. It is, therefore, rather as admitted by him, than as proposed by the other, that I shall proceed briefly to lay before you the line of proof adopted in his system. The general results it is directed to afford are, first, that the present continents have not existed anything like

* "Lyell," vol. i. pp. 224, 300.

the time supposed or required by the advocates of causes now in action; secondly, that whenever any accurate and definite measure of time can be obtained, it is nearly coincident with that which Moses assigns for the existence of the present order of things. Considering the immense distance of time to which we have to go back, there must be considerable discrepancies between the different dates; but they are not greater than the chronological tables of various nations, or even those of one nation as given by different authors will exhibit.

One method of attempting to arrive at the date of our last revolution, is that of measuring the increase made by the deltas of rivers, that is, the land gained, at the mouths of rivers, from the sea, by the gradual deposit of mud and earth, which they bear along with them in their course. By examining history, we may ascertain the distance, at a given date, of the head of the delta from the sea, and thus with accuracy determine the annual increase. By comparing this with the whole extent of territory which owes its existence to the river, we should have an estimate of how long it has flowed through its present channel. But hitherto, this measurement has been but vaguely taken, and consequently little more has been gained than a negative conclusion, opposed to the countless ages required by some geologists. Thus, the advance of the delta of the Nile is very sensible; for the city of Rosetta, which, a thousand

years ago, stood upon the sea, is now two leagues distant from it. According to Demaillet, the cape before it was prolonged half a league in twenty-five years; but this must have been a very extraordinary instance. However, it is unnecessary to suppose so immense a distance of time, from which to date the commencement of this formation. The delta of the Rhone was proved by Astruc, by comparing its present state with the accounts of Pliny and Mela, to have increased nine miles since the Christian era. That of the Po was scientifically examined by M. Prony, by commission of the French government. You are most of you probably aware of the high embankments between which this river runs: and this engineer ascertained that its level is higher than the roofs of the houses of Ferrara, and that it has gained 6,000 fathoms on the sea since 1604, or at the rate of 150 feet a year. Hence Adria, which once gave its name to the Adriatic, is removed eighteen miles from the sea. These examples will not allow us to allot a very indefinite period to the action of these rivers. A stream carrying with it such enormous deposits, that their yearly increase may be almost called visible, could not have required so many thousands of years to reach its present level.*

According to Gervais de la Prise, the retreat

* Cuvier, "Discours préliminaire," 3rd edit. *Paris*, 1825, p. 144. Deluc, "Lettres à M. Blumenbach," p. 256; "Abrégé de Géologie." *Paris*, 1816, p. 97.

of the sea or extension of the land by the depositions of the Orme, may be accurately measured, by monuments erected at different known epochs; and the result is that these causes cannot have been in operation longer than six thousand years.*

A more interesting chronometer is that of *dunes*. By this term are signified heaps of sand, which first accumulate on the shore, and then are pushed forward, by the wind, upon the cultivated lands, so as to desolate and destroy them. They often rise to an almost incredible height, and drive before them pools of rain-water, the discharge of which into the sea they effectually cut off. Deluc paid particular attention to those on the coast of Cornwall, and has described many of them very minutely. Thus, one in the neighborhood of Padstow, threatened to swallow up the church, which it completely overhung, having reached the very roof; so that all access would have been prevented but for the circumstance of the door being at the other end. Several houses had, however, been already destroyed in the memory of man.† In Ireland, these moving sands are not less destructive. The vast sand-plain of Rosapenna, on the coast of Donegal, was, little more than fifty years ago, a beautiful domain, belonging to Lord Boyne. A few years ago, the roof of the mansion-house was just above ground, so that the peasantry used to des-

* "Accord du Livre de la Genèse avec la Géologie." *Caen*, 1803, p. 75.

† "Abrégé," p. 102.

cend into the apartments, as into a subterranean; and now not the slightest trace of this is visible. But no part of Europe suffers so severely from this desolating scourge as the department of the Landes, in France. It has buried fertile plains and tall forests under its irresistible course; not only houses, but villages, mentioned in the records of past ages, have been covered over, without chance of being ever more regained. In 1802, the pools invaded five valuable farms; and there are now, or were, at least, a few years ago, ten villages threatened with destruction by the shifting sands. One of these, called Mimisoa, had been struggling, when Cuvier wrote, for twenty years, against a dune, sixty feet high, with little chance of success.

Now M. Brémontier studied this phenomenon with particular attention, for the purpose of submitting its laws to calculation. He ascertained that these dunes advance from sixty to seventy-two feet a year; and then by measuring the entire space they have overrun, he concludes that their action cannot have commenced much more than 4,000 years ago.* Deluc had previously come to the same conclusion, from measuring those of Holland, where the dates of dykes enabled him to ascertain their progress with historical accuracy.†

I should be only repeating the same conclusions

* Cuvier, p. 161. See D'Aubuisson, "Traité de Géognosie," *Strasb.* 1819, vol. ii. p. 468.

† "Abrégé," p. 100.

were I to detail to you his researches into the increase of turf, or the accumulation of detritus at the base of hills, or on the growth of glaciers, and their accompanying phenomena.* I will therefore content myself with quoting the opinions of eminent observers of general geological facts, in favor of his conclusions.

"This observation," says Saussure, speaking of the devolution of rocks from the glaciers of Chamouny, "which accords with many others I shall make later, gives us reason to think, with M. Deluc, that the actual state of our globe is not as ancient as some philosophers have imagined it."†

* Cuvier, p. 162. Knight's "Facts and Observations," p. 216. Deluc, "Traité élémentaire de Géologie." *Paris*, 1809, p. 129; "Abrégé," pp. 116–134; "Correspondence particulière entre M. le Dr. Teller et J. A. Deluc." *Hanov.* 1803, p. 161. A popular French writer on geology, speaking of the accumulations of detritus, brought down by glaciers, and deposited where they melt, known in French by the name of *murêmes*, thus concludes: "Their formation depending upon periodical and nearly constant causes, it is not difficult to calculate the time necessary for giving them the volume which we know them to possess; and as they certainly date from the commencement of the present order of things, they furnish a new method of arriving at an approximating knowledge of the time which has elapsed since the last cataclysm. This calculation leads still to the same result, and gives us five or six thousand years at most, as the age of our world." He then proceeds, like Cuvier, to show how exactly these facts agree with the Mosaic records, as well as with the annals of every other ancient nation. Dr. Bertrand's "Revolutions of the Globe," English trans. 1835, p. 269. See above, p. 320.

† "Voyages dans les Alpes," § 625.

Dolomieu writes as follows: "I will defend another truth, which appears to me incontestable, on which the works of M. Deluc have enlightened me, and of which I think I see the proofs in every page of the history of man, and wherever natural facts are recorded. I will say then with M. Deluc, that the actual state of our continents is not very ancient."*

Cuvier has not only assented to these conclusions, but has laid them down in far more positive terms. "It is, in fact," he says, "one of the most certain, though least expected, results of sound geological pursuits, that the last revolution which disturbed the surface of the globe is not very ancient." And in another place, he adds, "I think, therefore, with MM. Deluc and Dolomieu, that if there be anything demonstrated in geology, it is that the surface of our globe has been the victim of a great and sudden revolution, of which the date cannot go back much further than five or six thousand years."† And allow me to observe, that Cuvier intimates with sufficient clearness that in his researches he has not allowed himself to be swayed by any wish to vindicate the Mosaic history.‡

I trust I have now said enough to satisfy you regarding the modern tendency of this science; and I doubt not but Dr. Buckland's expected treatise in the Bridgewater collection, although necessarily

* "Journal de Physique," *Paris*, 1792, part i. p. 42.

† "Discours," pp. 139, 282.

‡ Page 352.

directed to show its connection with natural theology, will nevertheless throw further light upon the topics I have discussed. I cannot here refrain from expressing a wish that the study of geology may soon enter into the course of education, as completely as the other physical sciences. It is while the memory is young, and curiosity active, that the names of objects are most easily seized, so as to be firmly retained. Almost any district will present formations fit to exemplify the study; and its very pursuit, by requiring and encouraging actual and varied examination, gives a motive and a stimulus to exercise, which insures health conjointly with improvement.

Many, I know, entertain the idea that too minute an acquaintance with the material workings of nature greatly weakens that more enthusiastic and poetic feeling, which the contemplation of her face excites, and thus produces a preponderance of a cold and scrutinizing, over a warm and admiring, disposition. Yet I know not how this can be, except from some defect in the method of communicating such knowledge. There can be no reason why the geologist should not stand enraptured on the mountain's brow, and first range, with a poet's eye, over the splendid scene of an Alpine valley, before he descends to study and classify the various rocks which form its magnificent boundary. How should the comprehension of how nature works, be at all opposed to the perception of beauty in the results of her labors? On the con-

trary, it should seem as though the one must form a natural counterpart to the other. The skilful musician will, by casting his eyes over the written score, unravel in a moment its mazy movements, give to each note its harmonic power, and so combine them in his mind together, as thence to drink more music through his eyes than the untutored listener will enjoy, when he hears what has been written transformed into sound; and so may the learned in nature's laws measure her outward appearances by such just rule as must give him a truer perception of her charms than the mere observer can ever attain. To the unpractised eye, the web which proceeds from the loom will appear exceeding beautiful, and in design most orderly, while the machinery which produced it, seems a pile of confusion through its complicated wheels and pulleys; yet is it necessarily the type of what it brings forth, and the experienced artisan will perchance read in it, with equal admiration, the beautiful pattern it is calculated to work. And in like manner may the learned naturalist construct, from his knowledge of nature's processes, all those beautiful objects and scenes which others cannot fancy unless they have actually beheld them. The observation of how the rolled masses are disposed in the gorges and on the flanks of the southern Alps, must have led the discoverer to form in his mind a newer and a truer picture than a poet's imagination could have conceived, of the course pursued by the huge inundation which burst through them,

tore down their sides, and rode in rude triumph, with their rough spoils, into the plains of Italy. The contemplation of volcanic effects by a scientific eye, which can distinguish the masses thrown up by explosion, from the rolling scum of the fiery torrent, and can note, as at Glen-Tilt, the strange and incomprehensible manner wherein the hardest granite, reduced into a vitreous fluid, has shot upwards into the superincumbent rock, and injected itself through its veins, and the accurate measurement of the causes proportioned to such mighty effects, would convey, we may suppose, the sublimest idea possible of the terrible action of that powerful element, unto whose scourge this globe is yet in doom reserved.

It would, of course, be impossible to bring every branch of the natural sciences so completely into contact with sacred studies as these whereof we have treated, nor can it be necessary to do so. For there is one way in which they all can be made subservient to the interests of religion, by viewing them as the appointed channels by which a true perception and estimate of the Divine perfections are meant to pass into the understanding; as the glass wherein the embodied forms of every great and beautiful attribute of the Supreme Being may best be contemplated; and as the impression upon the mind of the great seal of creation, whereon have been engraven, by an Almighty hand, mystical characters of deepest wisdom, omnipotent spells of productive

power, and emblems most expressive of an all-embracing, all-preserving love. And even as the engraver, when he hath cut some way into his gem, doth make proof thereof upon the tender wax; and, if he find not the image perfect, is not thereby disheartened, so long as it presents each time a progressive approach to its intended type, but returns again and again unto his peaceful task; so, if we find not that, at once, we bear upon ourselves the clear and deep impress of this glorious signet, must not we fear to proceed with our labors, but go on, ever striving to approach nearer and nearer the attainment of a perfect representation. A few years will probably bring forward new arguments for the great facts whereof we have treated, which will render all that you have heard but of small value. Those that come after us will, peradventure, smile at the small comprehension granted to our age, of nature and her operations;—we must be content, amidst our imperfect knowledge, with having striven after that which is more full.

For, if the works of God are the true, though faint, image of himself, they must, in some way, partake of his immensity; and, as the contemplation of his own unshadowed beauty will be the unsating, everlasting food of unembodied spirits, so may we say that a similar proportion hath been observed between the examination of his image reflected on his works, and the faculties of our present condition; inasmuch as therein is

matter for meditation ever deeper, for discovery ever ampler, for admiration ever holier. And so God, not being able to give to the beauties of his work that infinity which is reserved to the attributes they exhibit, has bestowed upon them that quality which best supplies and represents it; for, by making our knowledge of them progressive, he has made them inexhaustible.

NOTE.

Referred to in Page 88, *on the Conformity between the Semitic and the Indo-European grammatical forms.*

It will have been observed by the reader that the personal pronouns are among the most important elements employed by ethnographers for determining the affinities of languages, and in the foregoing lecture it has been shown what important conclusions Lepsius has drawn from the marked resemblance between the Egyptian and Hebrew pronouns and suffixes. Dr. Prichard in his Appendix before referred to, at the end of his *Eastern Origin*, etc., has indeed compared some of the Hebrew with the Indo-European pronouns, as אַתָּא —*atta* with *tu*, etc. But it appears to me that a more minute analysis of this and the other pronouns will lead to more satisfactory conclusions.

When we discover a portion of each word in a particular class to be always identical, while the rest varies, we may justly conclude that it forms a generic characteristic, which may safely be omitted in studying the specific determination of the word, or in comparing it with other languages. Thus in Sanscrit, the pronoun of the first person is *aham;* that of the second, *tuam:* whence Bopp justly considers the syllable *-am* as merely generic, and

reduces the essential parts to *ah* and *tu*, corresponding, the first to the old German *ih*, Latin *ego*; the second to the Latin *tu*, the Persian تو —*to* or *tu*, and German *du*.

Now it seems to me that the Semitic pronouns are involved in a similar composition, which should be unravelled before we can expect to reach their characteristic parts, and this can only be seen by comparing forms, now lost in some of the dialects, but preserved in others. The syllable which we shall thus find common to all the persons in both numbers is אן, differently pronounced *an* or *en*, according to the tendency of the different dialects, but always composed of the same two letters, *aleph* and *nun*.

The pronoun of the first pers. sing. is in Heb. אָנֹכִי—AN-ochi, abbreviated into אֲנִי—AN-i; in Chaldaic, אֲנָא—AN-a: in Syriac, ܐܢܐ—EN-o; in Arabic, أَنَا—EN-a. The plurals are respectively Heb. אֲנַחְנוּ—AN-*ach*nu; Chaldaic and Samar. אֲנַן —AN-an; Syr. ܚܢܢ—chnan; Ar. نَحْنُ—N-achna. In the two last the preformative syllable has been more or less lost.

The pronouns of the second person are in Heb. (omitting for brevity's sake the feminines, which follow the masculines by rule) אַתָּה—atta, sing.; and אַתֶּם—attem, plur.: but in the first T, expressed in Hebrew only by a sign of duplication, there lurks a suppressed N, so that all grammarians agree that these forms stand for אַנְתָּה—

AN-ta, and אַנְתֵּם—AN-tem. This is placed beyond doubt by the other dialects; Chald. אַנְתְּ—AN-t, and אַנְתִּין—AN-tun; Syr. ܐܢܬ—AN-t, ܐܢܬܝܢ—AN-tun (though a stroke over the ת or N, indicates that the letter has not to be pronounced; thus connecting the other dialects with the Hebrew); Arab. أَنْتَ—EN-ta, أَنْتُمْ—EN-tom.

In the third person, the Hebrew and Arabic have entirely lost the compounding particle, or rather have adopted a different pronoun; but it has been carefully preserved by the Syriac in the plural, and by the Chaldaic in both numbers. Thus Chald. אִנּוּא—IN-e, sing.; אִנִּין—IN-un, pl. masc., אִנֵּין—IN-e(i)n. fem. In which words the *aleph* is pointed by I, on account of the reduplications of the N: Syr. ܐܢܘܢ—EN-un pl. masc., ܐܢܝܢ—EN-e(i)in.

From this analysis it would appear that the syllable אן is merely a generic particle, forming no essential portion of any pronoun, but common to all the persons: and consequently that it may, and ought to, be detached from them, before we can reach the peculiar or essential substance of each. For in a much more marked manner than the Sanscrit *am*, it pervades all the pronouns, of whatever number, gender, or person.

If we apply this system to the pronoun of the first person singular, we have the essential portion of it in Hebrew, for in all the other dialects it is

found only in its abbreviated form, אנ—OCHI, which may fairly be compared to the Sanscrit *ah-am*, or the German *ich*. Even the abbreviated form I(AN-I) will bear a sufficient resemblance to the old German *ih*.

Proceeding to the plural, it would appear that the radical portion of the Hebrew pronoun is ACHNU; the first of which seems to arise from the aspirate C or כ in the singular, here transmuted into a pure guttural. If so, the portion of the pronoun strictly denoting the plural number would be NU, and we have the gradations from the fuller to the abridged form in the other dialects, Arab. (N) ACH-NA; Syr. CH-NAN; Chald. (AN) AN. From this scale it would appear that NU, NA, or N, are the characteristics of the first personal plural; and this gives us a very singular coincidence with the Sanscrit and Greek duals *nou* and *νῶι* and the Latin plural *nos*.

In the second person the resemblance is still more marked; for upon stripping off the generic syllable, the pronoun is reduced to TA in Hebrew and Arabic, and into T in Chaldaic and Syriac, which sufficiently agrees with the Sanscrit *tu*-am, gen. *tai*, the Latin and Persian *tu*, and German *du*. The plural is formed from the singular by ordinary rule.

When I analyzed the pronouns of the third persons in Syro-Chaldaic, it was simply for the purpose of establishing the constant recurrence, through the entire pronominal system, of the

compounding particle. But the comparison between the pronouns of this person will appear not less striking than the foregoing, if we examine the forms preserved in the Hebrew and Arabic, and in the Syriac singular. The masc. sing. is in the first, הוּא—HU; in the second, هُوَ—hua; in the third, ܗܘ—hu. With these we may compare the Persian و—*o*; the Welsh *évo*, which, in the suffix, changes like Hebrew into *aw* or *o*; the Latin *hic*, *hujus*, *hi*; and the English *he*. The feminine is the same in all: הִיא and ܗܝ—HI. It is precisely the same in Welsh, in which, *hi* is the third person feminine. The plural הֵם—HEM, or its feminine הֵן—HEN, or the Syriac ܗܢܘܢ—EN-UN, may be, perhaps, compared with the corresponding Welsh *hwynt*.

I put forward these conjectures with becoming reserve. I have seen too often how sadly an ingenious theory may seduce its author into the mistaking of casual or imaginary resemblances for real analogies, not to put myself doubly on my guard, where any new and artificial view strikes my mind. Still I cannot but think that the process I have followed, and the affinities which it has opened, are not unworthy of attention, from the uniformity discernible in the whole sphere of their action. If so, we have a new and important point of contact between the two great families, based upon the grammatical analysis of the primary elements of speech.

There are other investigations which I think worthy of being made, from the probability of their leading to the same results, but for the present the foregoing may suffice. I will only remark, that traces appear to exist in the Semitic dialects, of what is generally considered more peculiar to the other family, conjugation by auxiliary verbs. For the passive voices in Chaldaic and Syriac, Ithpael, Ethpael, Ethpaal, and Ettaphel, seem clearly to have sprung from the union of the verb substantive אִית, ܐܝܬ —*ith*, of which traces are found in the Hebrew לַיִת—*la-ith*, *it is not*, and in the determinative particles אֵת—*eth*, and ـــ—*yoth*, with the indefinite verb.

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